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# Settlement Patterns of the Ejutla Valley, Oaxaca, Mexico: A Diachronic Macroscale Perspective

**Gary M. Feinman and**
**Linda M. Nicholas**

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**Cover photograph:** Mogote de las Azucenas, a hilltop terrace site in the northern Ejutla Valley (photograph by Linda Nicholas, 1983).


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# Preface

Both authors' first exposures to the Valley of Oaxaca transpired through their participation in the archaeological settlement pattern surveys directed by Richard Blanton and Stephen Kowalewski (Feinman in 1977 and 1980, Nicholas in 1980). During those investigations, we spent much of our time walking in the southern part of the valley, in Ocotlán and the southern Valle Grande, areas that abut the Ejutla district on their southern edges. In those years, we often wondered and speculated about the archaeological patterns that lay beyond the low hills at the southern survey limit of the Valley of Oaxaca. A large pre-Hispanic site that lies beneath the contemporary district head town, Ejutla de Crespo, had been known since the 1890s, and subsequently Ignacio Bernal recorded that site in his regional reconnaissance of the Oaxaca Valleys during the 1960s. Nevertheless, few archaeological details about the Ejutla site or the Ejutla Valley had been published, and we knew next to nothing about the pre-Hispanic past of Ejutla. With the thrill of imminent discovery on our minds, we implemented a systematic, full-coverage survey of this approximately 500-km$^2$ region in the mid-1980s.

We have written a number of research articles on our principal findings, yet it is only after much delay that we are publishing a final, more detailed monograph of the Ejutla Valley settlement pattern survey. We carried out the Ejutla survey at a time when few areas beyond major highland valleys had been investigated systematically. Now survey projects have been completed in many other large and small valleys in highland Mesoamerica. The results of those investigations (though not always full coverage) help contextualize and situate our findings from Ejutla in a much broader framework than would have been possible 20 years ago. Our efforts to understand the history of pre-Hispanic Ejutla also have been aided by subsequent excavations that we (and many others) have directed in the Central Valleys of Oaxaca and beyond.

We gratefully acknowledge the critical support received from the National Science Foundation for the Ejutla Valley Settlement Pattern Project (BNS-84-06229 and BNS-85-42668 to the senior author) and the Valley of Oaxaca Settlement Pattern Project (GS-28547, GS-388030, and BNS-19640 to Richard E. Blanton; BNS-7914124 to Stephen A. Kowalewski). The permission and assistance of the Instituto Nacional de Antropología e Historia and the Centro Regional de Oaxaca are recognized with great appreciation. Joaquín García Bárcena, Manuel Esparza, and Ma. de la Luz Topete were particularly supportive during the years when these regional surveys were implemented. Nelly Robles García has always been a wonderful colleague and dear friend during the years we have studied Oaxaca's past. The well-timed support of the University of Wisconsin–Madison Graduate School helped us get this research under way. Early stages of our postfield analyses were completed while the senior author was a resident scholar at the School of American Research (SAR; now School of Advanced Research). We thank Douglas W. Schwartz and the entire SAR staff for providing a highly stimulating atmosphere for productive research. The analytical progress that we made years ago in Santa Fe contributed importantly to our conceptual framing of this study.

We are especially indebted to our mentors, Richard Blanton and Stephen Kowalewski, for both introducing us to Oaxaca and having the patience and confidence to train us. The regional surveys that they innovatively proposed and directed in the Valley of Oaxaca laid the essential groundwork for our expansion into the Ejutla Valley; settlement patterns in the Ejutla Valley would have been difficult if not impossible to interpret without the larger context provided by the prior systematic surveys in the Valley of Oaxaca. Rich and Steve have continued to be stimulating colleagues whose ideas and friendship are a constant inspiration. We also thank Scott Fedick, Laura Finsten, and all the members of the North American survey crews that they helped lead in Ejutla; their efforts were essential in the timely completion of the field survey. We give special thanks to Everardo Olivera (Lalo) and the late Fausto Olivera (Paco), of Xaagá, Oaxaca. Paco and Lalo worked with us on the Valley of Oaxaca survey, and we were especially delighted when they were more than willing to make the long weekly trek to assist us in Ejutla. Their comradery and daily contributions to the success of the Ejutla Valley survey will always be remembered with deep gratitude.

We also thank the significant number of generous colleagues, including Thomas Charlton, Kent Flannery, David Grove, Joyce Marcus, John Paddock, Jeffrey Parsons, T. Douglas Price, Elsa Redmond, María de los Ángeles Romero Frizzi, Charles Spencer, Ronald Spores, James Stoltman, Cecil Welte, Marcus Winter, and John Yellen, each of whom provided helpful advice and much-appreciated support that aided and facilitated this investigation in various ways. We are deeply grateful to Jill Seagard, scientific illustrator at The Field Museum, who assisted us with the preparation of many of the graphics included in this work. We also thank two anonymous reviewers and Fieldiana Associate Editor Jonathan Haas for their constructive comments on an earlier draft of this monograph. Finally, we express our appreciation for the municipal authorities and people of Ejutla de Crespo and the surrounding district, who supported, tolerated, and provided the permissions that we needed to implement this study. We hope that they are not disappointed by this preliminary effort to make sense and sketch the outlines of their deep and significant history.

# Chapter 1: Framing Constructs and Introduction

> In historical analysis as I see it, rightly or wrongly, the long run always wins in the end.
>
> (Braudel, 1973, p. 1244)

Over the last half century, archaeologists, focused on the historical examination of human socioeconomic networks and groups, have become increasingly sensitive to the complexities and nuances of geographic scale. Gone are the days when researchers could facilely extrapolate or generalize from findings at lone sites (or often just small parts of large sites) to entire regional societies. The advent of systematic settlement pattern studies in the mid-20th century (Parsons, 1972; Billman & Feinman, 1999; Kowalewski, 2008; Fish & Kowalewski, 2009) convinced most archaeological practitioners in many regions of the world that long-term social change must be examined at multiple scales and that those scales ought to include a broader spatial or regional perspective that was systematically derived from archaeological surveys or settlement pattern research. Only through such studies can archaeologists explore differences between communities in a region and how those differences, whether they relate to community sizes, monumental construction, or artifact distributions, change over time. Likewise, only broader-scale vantages allow researchers to examine the relationships and degrees of connectivity between communities across a landscape and between a region of settlements and their ecological landscape (Kowalewski, 1995).

More recently, scholars studying long-term cultural sequences have realized that even regional vantages are not entirely adequate and that larger-scale perspectives are required to examine the borders and boundaries of polities, and to assess the relative permeability of geographic and political barriers when present (Kowalewski, 2004). We have seen repeatedly through history that even hierarchically organized polities are rarely bounded in hermetic fashion or that the nature of territorial control is uniform across space (e.g., Wolf, 1982, pp. 6, 7, 17; M. L. Smith, 2005, 2007). In addition, economic and cultural networks often are not coterminous with the limits of political units (e.g., Blanton & Feinman, 1984; Smith, 2012). It is for these reasons that, over the last few decades, archaeologists, especially those working at regional scales, have considered and called for broader, macroregional conceptual schemes and perspectives that allow researchers to define political and economic interactions over wide spatial scales (Kowalewski, 2004; Hall et al., 2011) rather than assuming that patterns of human behavior always have been defined and tightly constrained by formal geographic regions (sensu Haggett, 1966, pp. 242–247). Human geographers have long recognized that interactive or nodal regions often do not strictly conform to formal topographic or landscape features.

In this volume, we examine the deep history of the Ejutla Valley (Oaxaca, Mexico) over roughly 3,000 years from the advent of the region's first sedentary villages to the Spanish Conquest. Yet our vantage on the Ejutla Valley is informed and contextualized by our knowledge of neighboring areas in Mexico's Southern and Central Highlands, including the larger, adjacent, and more intensively studied Valley of Oaxaca (Fig. 1.1). Thus our perspective in this work is explicitly diachronic and multiscalar, incorporating pertinent information and analytical vantages from sites to regions to even larger-scale perspectives whenever possible.

The Valley of Oaxaca is the largest expanse of flat land in Mexico's rugged Southern Highlands and has long been recognized as a core region of pre-Hispanic importance (Palerm & Wolf, 1957). Early sedentary agriculturalists in the valley were among the first to construct public buildings in Mesoamerica, and carved-stone glyphs at valley sites represent some of the region's earliest writing (e.g., Marcus & Flannery, 1996). Monte Albán, situated at the nexus of the valley's three branches or arms, was one of highland Mesoamerica's earliest cities (founded ca. 500 BC), and it remained the most populous and architecturally monumental settlement in the Southern Highlands for more than a millennium (Blanton, 1978). Up to the Spanish Conquest, the Valley of Oaxaca was a locus of political, demographic, and economic power in Mesoamerica.

The systematic, full-coverage settlement pattern survey of the Valley of Oaxaca placed Monte Albán in its larger regional context and documented local variation and important changes in settlement location, population, spatial distribution of settlements relative to agrarian resources, and patterns of exchange over time (Blanton et al., 1982; Kowalewski et al., 1989). Monte Albán was founded on a hilltop near the center of the region, but only during the regional survey of the surrounding area did it become evident that this central area of the Valley of Oaxaca had not been heavily populated before the site's establishment (Kowalewski, 1976). Nor was the new capital situated near the best agricultural land in the valley (Kowalewski, 1980, 1982). Such local factors as the distribution of agricultural land and resources could not adequately explain the location of Monte Albán or its rise and fall. Such local factors also could not account for the rises, falls, and distributions of the valley's population over time. The processes and causal linkages that underlie long-term change in the valley clearly extend beyond the bounds of the region that had been systematically surveyed as of 1980 (Kowalewski et al., 1989). Understanding key processes—the rise and collapse of complex polities, imperialism, and changing commodity flows between regions—requires comparable data from a much larger area, a conceptual reframing from a regional scale to the macroregion (Blanton & Feinman, 1984; Feinman, 1997; Balkansky, 1998a, 2006; Finsten & Kowalewski, 1999, p. 29; Kowalewski, 2004).

The Valley of Oaxaca is part of a larger physiographic system—the Central Valleys of Oaxaca—that incorporates smaller valleys on its perimeter. The Ejutla Valley, on the southern fringe of the Valley of Oaxaca, was a logical place to begin expanding our investigatory scale beyond the region (Fig 1.2). When we began our full-coverage survey of the Ejutla Valley in the mid-1980s, our initial focus was on the relationship between two valleys that appeared unequal not only in size but also in past importance—in one sense, a core

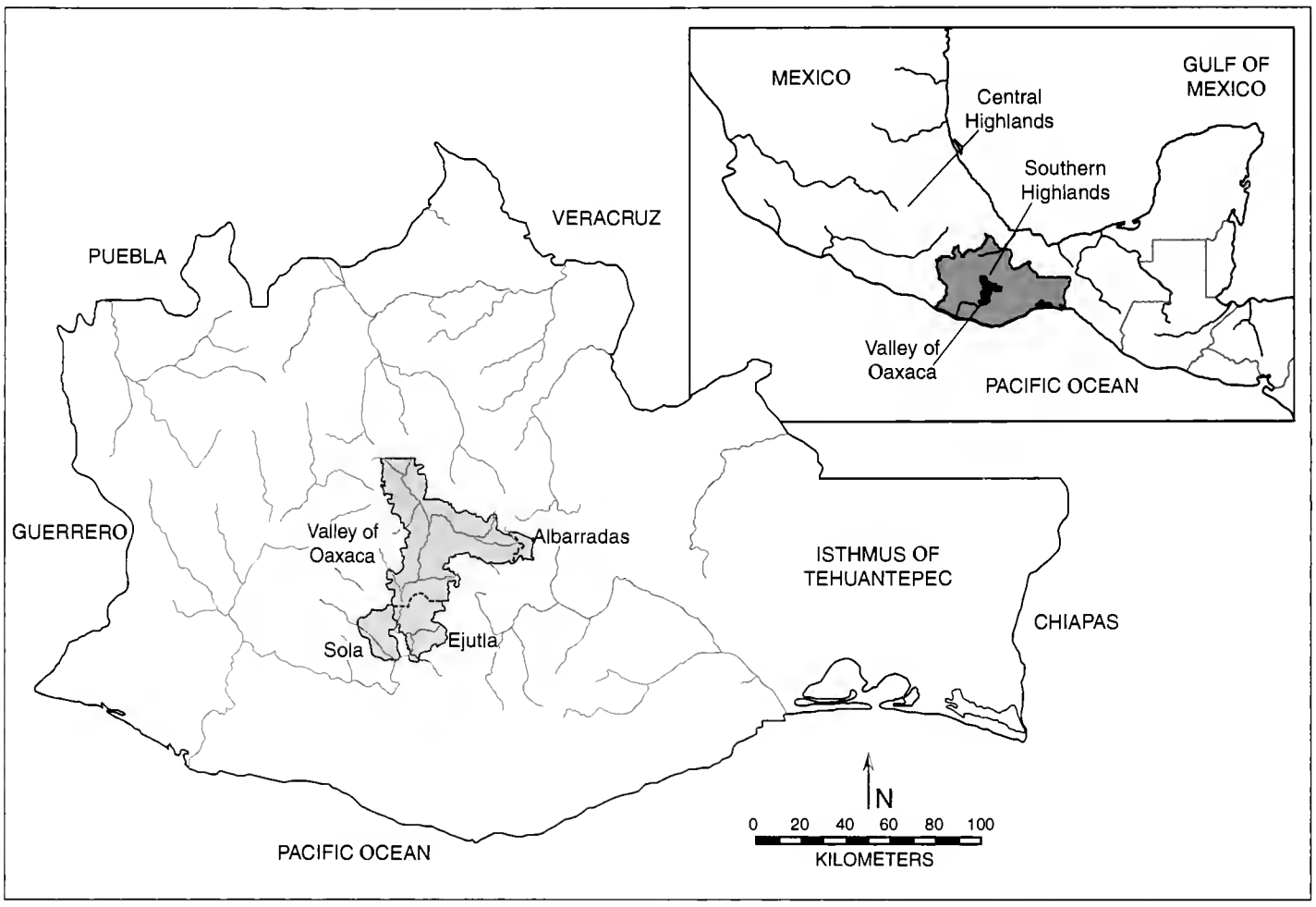



FIG. 1.1. Mexico and the State of Oaxaca, showing regions mentioned in the text.

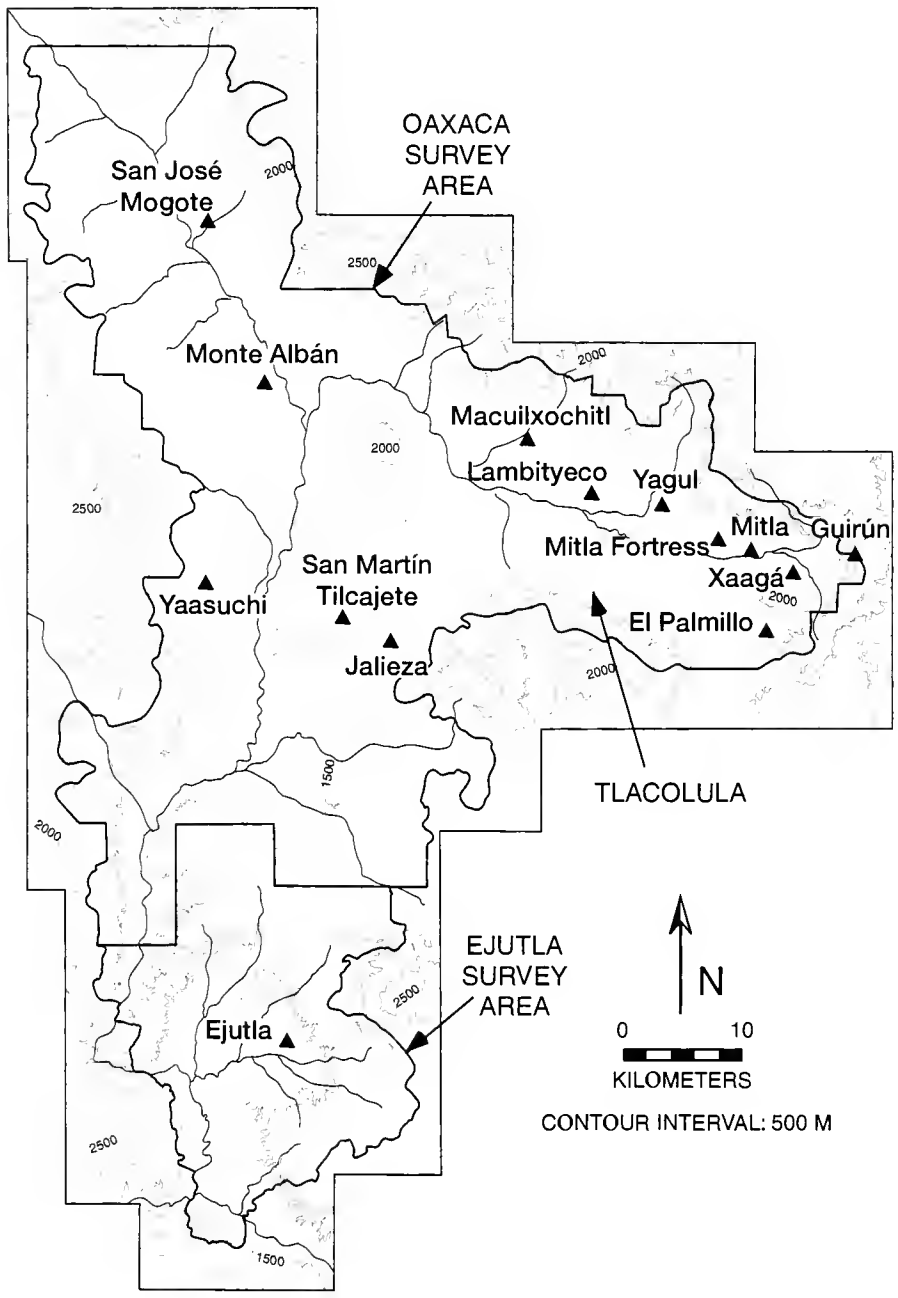



FIG. 1.2. The Oaxaca and Ejutla survey areas, showing sites mentioned in the text.

and its periphery. A principal question driving our research was how major developments in the Valley of Oaxaca affected or were felt in a smaller adjacent valley and how activities in smaller Ejutla and other neighboring regions affected the path of long-term change in the larger Valley of Oaxaca.

Before our survey, little was known about the pre-Hispanic past of the Ejutla region. How closely was this smaller valley tied into the Valley of Oaxaca politically, culturally, and economically? How did that relationship change over time? What effect did processes in the larger valley, such as the establishment of an early city (Monte Albán), have on the smaller, presumably peripheral valley? Was change concurrent, or was there a time lag? Were such changes felt at all? Was Ejutla always peripheral, and in what ways? Or possibly did Ejutla ever play a role in changes that we had already recorded for the larger valley?

We provided initial answers to those questions in a series of published papers (Feinman, 1985, 1991a, 1997; Feinman & Nicholas, 1988, 1990a,b, 1991a,b, 1992a,b). The regional survey of Ejutla gave us a perspective on a smaller valley that was more or less equivalent in size to one of the three arms of the Valley of Oaxaca. What was happening in Ejutla could not be understood without reference to the larger valley. More significantly, though, we could append our findings onto a larger studied area instead of just comparing Oaxaca and Ejutla as two separate regions. This expansion in the area of investigation provided new perspectives on the larger valley as well. It allowed us to look at shifts in settlement distribution at multiple scales, not merely comparing entire valley systems but also focusing on patterns of change across a large contiguous spatial landscape.

Now, more than two decades after we completed the settlement pattern survey of the Ejutla Valley, our initial consideration to look at scales larger than the region has been supported by the implementation of many subsequent pedestri-

an surveys in the margins of the Valley of Oaxaca and in other large (and small) highland valleys elsewhere in Mesoamerica (Nichols, 1996; Smith, 2002; Balkansky, 2006). We are able to draw on these more recent investigations (especially those that are full coverage) as well as a broad comparative synthesis of highland Mesoamerican survey information compiled by Charlotte Smith (2002) to contextualize our findings from Ejutla. We also draw on, when relevant, our subsequent intensive surface surveys at three sites in the Valley of Oaxaca (Feinman & Nicholas, 2004a). All of these surface studies provide context to situate Ejutla in the larger Mesoamerican world. In addition to this broadened macroscale perspective on highland Mesoamerica, we are informed by our subsequent excavations at the Ejutla site (situated beneath the contemporary district capital, Ejutla de Crespo) in the center of the Ejutla Valley and at two hilltop settlements in the eastern (Tlacolula) arm of the Valley of Oaxaca (e.g., Feinman & Nicholas, 1993, 1999, 2000, 2004b, 2010a; Feinman et al., 2002, 2008). Although we do not report on these investigations in any detail here, we do draw on specific aspects of them when they enable us to refine, clarify, or amplify our original survey findings.

## Background to Research in the Oaxaca and Ejutla Valleys

The Valley of Oaxaca has been a focus of archaeological investigation for more than 100 years. Early archaeological explorers were drawn to the magnificent hilltop ruins of Monte Albán and the later well-preserved pre-Hispanic palaces and cruciform tombs at Mitla, in the eastern arm of the valley (Bandelier, 1884; Holmes, 1897; Saville, 1900, 1909; Batres, 1902). In the early 1930s, Alfonso Caso began a long career of excavations at Monte Albán in which he cleared and reconstructed Monte Albán's Main Plaza; excavated numerous public buildings, palaces, and tombs; and established the principal ceramic chronology for the valley (Caso & Bernal, 1952; Caso et al., 1967; Caso, 1969; Robles García & Juárez Osnaya, 2004; Table 1.1). Caso's work established Monte Albán as one of Mesoamerica's earliest cities. For over 1,000 years (500 BC–AD 800), the urban center continued as the capital of the Zapotec-speaking regional polity that was centered in the Valley of Oaxaca (Marcus & Flannery, 1996, pp. 11–12).

The ceramic assemblages, largely undecorated, associated with Monte Albán's apogee and then decline were less well defined than earlier ceramic assemblages, and Caso's students and their associates turned to investigations at other important sites of the era in an attempt to gather additional information on the associated ceramic assemblages. Excavations at Yagul (Bernal & Gamio, 1974) and Lambityeco (Paddock et al., 1968; Paddock, 1983a), in the eastern arm of the Valley of Oaxaca, provided information on the era during and following the fall of Monte Albán (ca. AD 700–1300), including an extension/amplification of the ceramic chronology for the valley. Another project led by Kent Flannery focused on the earlier history of the valley, prior to the foundation of Monte Albán. Excavations at San José Mogote (Flannery & Marcus, 2005) and other Formative sites (Winter, 1972; Drennan, 1976; Flannery, 1976; Whalen, 1981) exposed early living floors that provided critical data for documenting the establishment of settled villages in the valley and the transition to ranked societies.

TABLE 1.1. Chronological sequence for the Valley of Oaxaca and Mesoamerica.

| | Oaxaca | Mesoamerica |
|---|---|---|
| 1500 | | |
| | | Late Postclassic |
| 1300 | | |
| | Monte Albán V | |
| 1100 | | Early Postclassic |
| 900 | | |
| | Monte Albán IV | |
| 700 | | Late Classic |
| | Monte Albán IIIB | |
| 500 | | |
| | Monte Albán IIIA | Early Classic |
| 300 | | |
| AD 100 | Monte Albán II | Terminal Formative |
| 100 BC | | |
| | Monte Albán Late I | |
| 300 | | Late Formative |
| | Monte Albán Early I | |
| 500 | | |
| | Rosario | |
| 700 | | Middle Formative |
| | Guadalupe | |
| 900 | | |
| | San José | |
| 1100 | | Early Formative |
| 1300 | Tierras Largas | |
| 1500 | | |

These investigations also extended the ceramic chronology devised by Caso and his associates (Caso et al., 1967) by adding ceramic phases that predated Monte Albán (Flannery & Marcus, 1994).

The establishment of this 3,000-year ceramic chronology for the Valley of Oaxaca (ca. 1500 BC–AD 1520), although not without its problems, laid the groundwork for the implementation of systematic settlement pattern survey in the valley in the 1970s. Richard Blanton (1978) began with the intensive surface survey of Monte Albán; over the following decade, the entire Valley of Oaxaca was surveyed (Kowalewski, 1976; Blanton et al., 1982; Kowalewski et al., 1989). We followed with the full-coverage survey of the Ejutla Valley in the mid-1980s (Feinman & Nicholas, 1990a). In the mid-1990s, we turned our attention to the eastern arm of the valley, extending the regional survey into the Albarradas area beyond the large Guirún site and the mountains at the valley's eastern edge (Feinman & Nicholas, 1996a, 1999). We followed with intensive surface survey at three hilltop terrace sites in the Tlacolula arm (Feinman & Nicholas, 2004a). Andrew Balkansky (2002), who assisted us on the Albarradas survey, also completed a systematic settlement pattern investigation of the nearby Sola Valley.

Although the data collected during these surveys provided the broad-scale information necessary to begin addressing a series of questions concerning long-term changes and spatial variation across the region, problems of resolution in the published ceramic chronologies necessary to distinguish Late Classic from Early Postclassic ceramic assemblages persisted, raising debates about interpretations of valleywide settlement patterns. In addition, not surprisingly, other new questions

arose that required the collection of finer-grained ceramic data. During the survey of the Ejutla Valley, for example, we documented the large-scale production of ornaments from Pacific marine shell at the multicomponent pre-Hispanic site under the modern district capital, Ejutla de Crespo (Feinman & Nicholas, 1992a). The concentration of shell ornaments and production debris at the Ejutla site was highly anomalous, indicating that it was a nexus in interregional exchange. The information required to date and to determine the context and scale of this production (to adequately assess Ejutla's role in interregional exchange) required additional investigation. Thus, in the early 1990s, we began a series of excavations at the Ejutla site (Feinman & Nicholas, 1993, 1995, 1996b, 2000, 2004b; Feinman, 1999a).

Following the regional surveys, excavations in residential and other contexts at a number of sites in the Valley of Oaxaca have expanded/amplified original survey findings. Sites excavated in the southern arm of the valley include Jalieza (Finsten, 1995; Casparis, 2006), Yaasuchi (Sherman, 2005), and San Martín Tilcajete (Spencer & Redmond, 2004a; Elson, 2007; Fig. 1.2). To expand our spatial perspective, we began a decade of excavations at El Palmillo in the eastern, Tlacolula arm of the valley in 1999 (Feinman et al., 2002, 2006, 2008; Feinman & Nicholas, 2004c, 2005; Haines et al., 2004; Haller et al., 2006). More recently, we initiated excavations at the nearby Mitla Fortress (Feinman et al., 2010) in an effort to more directly focus on the Classic–Postclassic transition in the Valley of Oaxaca. Other more recently excavated sites in Tlacolula include Lambityeco (Markens, 2008), Macuilxochitl (Markens, 2004; Faulseit, 2008, 2010), and Xaagá (Winter, 2003a; Markens, 2008). Additional excavations have been carried out in residential areas at Monte Albán as well (González, 2003). Collectively, these excavations provide household and site-based information that complements the broader findings from the surveys.

These excavations also have provided information on ceramic variation and change that is relevant for more precisely dating the Classic–Postclassic transition in the Valley of Oaxaca. We draw on these finer-scale, more site-focused observations and materials when they amplify or clarify key issues and themes developed in this work. As a consequence, some of our interpretations are bolstered by new findings that we (and others) made subsequent to the Ejutla Valley survey. In Chapter 9, we review the debates and problems that have plagued discussions of the Classic–Postclassic period transition in the Valley of Oaxaca for decades (e.g., Marcus & Flannery, 1990; Oudijk, 2002; Markens, 2004). That chapter makes a detour from the phase-by-phase analyses of settlement pattern findings that characterize much of this work to review the genesis of these long-standing chronological debates and advance a potential path toward greater understanding of this important era. The interpretation offered is underpinned by excavation findings from several sites, some of which were undertaken after the Ejutla survey.

## Key Themes

More than 40 years ago, Shmuel Eisenstadt (1968, p. 231) recognized that processes of social, political, and economic change and differentiation and the responses to them do not take place within isolated, tightly bounded societies. A number of social theorists refined and expanded this large-scale approach and adopted macroregional or "global" perspectives (e.g., Braudel, 1972, 1973; Wallerstein, 1974; Wolf, 1982). Much of this macroscale analysis in the social/historical sciences has focused on the contemporary "world" and its genesis (e.g., Frank, 1979; Wallerstein, 1980; Pomeranz, 2000; Goldstone, 2002); however, others have applied similar frameworks in the investigation of more ancient and non-Western social systems (Schneider, 1977; Blanton & Feinman, 1984; Chase-Dunn, 1988; Abu-Lughod, 1989; Hall et al., 2011).

Embedded in this macroscale perspective is a focus on the interrelations among the component units and networks (regions, polities, market systems, populations, communities, households, or individuals), how these relations change over time, and how the nature of the integrations are affected by the internal organizations of the components. "To explain the situation of any place requires us to look at numerous factors, some global and some local, all of which can affect the outcome in distinctive ways" (Smith, 1983, p. 345). In a similar vein, Robert McC. Adams (1977, p. 274) recognized that the "manipulation and control of the spatial and temporal framework" is fundamental to reconstructing the past from archaeological vestiges (see also Parkinson & Galaty, 2009).

There also is the recognition that political regions are not natural and that they do not necessarily conform to topographic features. Rather, they are continually remade in relation to one another (Cartier, 2002, p. 106). We should not constrain our analysis of political and economic changes across large areas to artificially bounded boxes defined by natural environmental features or archaeological survey regions or past/present political units (Tilly, 1989, p. 181; M. L. Smith, 2005). The establishment of a political institution in a region can have lasting cultural and economic effects that outlive the political institution itself.

When the first full-coverage surveys were carried out in central Mexico (e.g., Sanders et al., 1979), regional systems were conceptualized as closed, self-contained entities in which local environmental and demographic factors were the prime variables affecting settlement patterns and long-term change (e.g., Sanders & Price, 1968; Logan & Sanders, 1976; Sanders & Webster, 1978; Sanders, 1984). This approach was soon viewed by many as too limited to explain a wide array of questions (Blanton, 1990, 2005) about past social systems and their interactions and largely has given way to broader-scale perspectives concerning the interconnection of ancient Mesoamerica at a scale larger than the single polity or region (Pailes & Whitecotton, 1979; Blanton & Feinman, 1984; Whitecotton, 1992; Balkansky, 1998a, 2006; Kowalewski, 2004).

Mesoamerica is a key macroregion for studying complex societies over long time horizons. This large area shares many cultural conventions but also comprises many different peoples and ethnic groups. Over the pre-Hispanic era, there were many cores and peripheries across Mesoamerica, and while the balances of power shifted geographically, so, at times, did the bases of power. Boundary relations were in constant flux (e.g., Kowalewski et al., 1983a; Feinman & Nicholas, 1991b, 1992a), and demographic processes ebbed and flowed in many regions across time. The role of trade and changing flows of goods were important processes affecting the relationships between regions. All of these processes are

productively examined over broad spatial and deep temporal scales.

Here, in this work, our principal data are long-term settlement patterns and demography (see Kowalewski, 1997, 2003a). Key themes include political development, decline and reorganization, and the relationship between these organizational cycles and population shifts. A specific focus is the rise of Monte Albán, its later fall, and the emergence of smaller polities in the wake of the regional and maeroregional reorganizations that ensued. When possible, we endeavor to assess the economic underpinnings of political power and how that relates to locally available resources, such as land and water, as well as goods received through exchange. The links between political power and the distributions of people across landscapes are not surprising given the rather basic nature of ancient Mesoamerican technologies and the importance of human work or labor for amassing military might and economic resources. Why do polities/systems rise and fall? Why do population trends vary so much from region to region over time? These are fascinating questions that require a multiscalar approach to see, assess, and analyze the patterns of change. Political-economic shifts are not explained fully by local or even regional events/processes; rather, they sometimes are affected or initiated by wider macroregional processes (e.g., Smith, 1992a). Political-economic factors at the broad scale can create local variation, with shorter-period swings that create landscapes of demographic differences (Kowalewski, 2003a, p. 323). What appears as a broad pattern when we examine large areas may look a lot messier when we vary the scale of analysis and focus down on smaller areas. There also is the recognition of concordant change, in which broad processes or specific events affecting large areas may lead to diverse result/outcomes in different areas (Smith, 2002; Kowalewski, 2004; Balkansky, 2006).

## Organization of the Book

This monograph is organized into 11 chapters, and although we endeavor to keep larger and more comparative, problem-focused themes at the forefront, our overriding aim is to present and contextualize the findings from our settlement pattern survey of the Ejutla Valley. For that reason, our coverage is heavily descriptive. We present empirical findings that relate to theoretical issues that were relevant when we implemented the study as well as questions and debates that have emerged subsequently. In Chapter 2, we situate Ejutla geographically, environmentally, and historically in relation to the Valley of Oaxaca. Ejutla's physiographic and historical relationship to the Valley of Oaxaca is not simple, and our discussions of the pre-Hispanic era are enlightened by this environmental and historical context. The Ejutla region cannot be viewed as a small microcosm of the larger valley on its northern boundary, nor was it always well integrated into the larger valley system or entirely isolated or autonomous. We also outline what little was known about pre-Hispanic Ejutla prior to the mid-1980s.

In Chapter 3, we discuss the importance of regional, full-coverage survey and briefly outline the history of this archaeological field procedure, focusing on systematic settlement pattern surveys in highland Mesoamerica, the Valley of Oaxaca, and the Ejutla Valley. We present our field and laboratory methods, which were highly comparable to survey research conducted earlier in the Valley of Oaxaca (Blanton et al., 1982; Kowalewski et al., 1989). We briefly consider the significant chronological problems that have plagued archaeologists working in the Valley of Oaxaca and how we dealt with them at the time of the fieldwork. We outline the methodology employed in our land use studies and summarize some of the general findings from these analyses, which environmentally ground our settlement pattern discussions.

Our principal goal in surveying the Ejutla Valley was to gather settlement data that could be compared to the Valley of Oaxaca. More broadly, we aimed to draw on the corpus of other surveys in highland Mesoamerica to place Ejutla in a broader, macroscale context. In her synthesis of regional surveys across the highlands, Smith (2002) found general trends that were marked by considerable local/regional variability. Her findings and those by others (e.g., Balkansky, 2006) provide a takeoff point for our phase-by-phase discussions of Ejutla's pre-Hispanic past. We do not repeat those comprehensive syntheses here. Rather, at times, we make targeted comparisons with specific highland regions where full-coverage surveys have yielded data eomparable to those we have for the Ejutla Valley and the Valley of Oaxaca and when such comparisons help amplify our discussions.

Chapters 4 to 10 each focus on a specific slice of time, from the Early and Middle Formative to the Late Postclassic. Chapters 4 through 8, as well as Chapter 10, describe and examine the basic empirical results of our regional study of the Ejutla Valley. We begin each of these chapters with a discussion of the major transitions and processes that characterized that segment of time in highland Mesoamerica and then proceed with a more descriptive discussion of what we found in Ejutla and how that relates to the chapter's theme. As noted above, Chapter 9 deviates from the more general pattern, dealing specifically with the Classic–Postclassic transition. In that chapter, we reexamine and reinterpret findings from the regional surveys of the Valley of Oaxaca and our own discussions of the Ejutla Valley (Feinman & Nicholas, 1990a) in light of new information on ceramic variation and chronometric dating recovered through more recent excavations. This chapter, less tied to the recounting of specific survey results than others, offers an alternative chronological and interpretive scenario for the later part of the pre-Hispanic sequence in the Central Valleys of Oaxaca. The interpretation advanced both draws from the arguments made by scholars on different sides of the chronological debate and provides a scenario that is in basic conformance with known archaeological, ethnohistoric, and chronometric data. Although Chapter 9 does not present settlement data in a manner comparable with the chapter before and after it, we situate it in its current position because of its focus on the Classic–Postclassic transition.

Each of these seven chapters (Chapters 4–10) takes an explicitly macroregional, multiscalar, diachronic approach as we strive to interpret and understand pre-Hispanic shifts in the Ejutla Valley by placing them in the context of what was happening at larger scales, from the Valley of Oaxaca and the Southern Highlands to the broader Mesoamerican world. This multiscalar approach enables us to document how population, access to certain goods, monumental architecture, and a range of other variables shifted over time during the pre-Hispanic era.

The final chapter (Chapter 11) offers synthetic thoughts and summarizes major historical themes that crosscut millennia and cannot be analyzed adequately in the chapters that focus on specific phases. We also offer a number of overarching archaeological comparisons concerning the Valley of Oaxaca and the Ejutla Valley (treating them more as definable regions here). This final chapter also draws on the analyses of long-term change in the pre-Hispanic Southern Highlands to reflect briefly on broader comparative theoretical issues that extend beyond the specific regional findings that necessarily receive the bulk of our consideration.

# Chapter 2: Geographical, Environmental, and Historical Background on Ejutla

> Ecology as *human ecology* cannot ever be an autonomous discipline, except in the limited sense of an understanding of the dynamics of human populations in their ecological context.
>
> (Ellen, 1982, p. 279)

The Valley of Oaxaca and the Ejutla Valley are situated in Mexico's Southern Highlands, a rugged mountainous zone composed of agriculturally forbidding steep slopes interspersed by a series of alluvial basins. Both valleys are part of a series of large drainage basins of the Atoyac River that are collectively called the Central Valleys of Oaxaca (Fig. 2.1). The only mountainous zone in Mexico with a larger system of valleys is the Central Highlands where modern Mexico City is located.

There is no consensus on how the Valley of Oaxaca and the Ejutla Valley should be defined relative to each other (e.g., Beals, 1975, p. 29). Do they constitute one large valley system (i.e., region), or are they two separate ones? Part of this difficulty rests on the complex ecology, geography, and political history of the State of Oaxaca (Hamnett, 1971; Kowalewski et al., 1989, pp. 3–24; Ordóñez, 2000). Yet the problem is much broader, as geographers have long grappled theoretically with how to define regions. Different regional boundaries may be produced if the investigator relies principally on environmental or cultural variables, physical similarities (formal), or measures of interconnection (nodal) as the key criteria to define geographic units. Alteration of the scale of analysis also may yield different regional limits and configurations (Haggett, 1966, 1972; Meentemeyer & Box, 1987).

On the basis of physiographic features of the landscape alone, Oaxaca and Ejutla can be defined as two separate valleys (e.g., Flannery et al., 1967; Welte, 1973). The Valley of Oaxaca forms the upper basin of the Atoyac River. The southern watershed boundary of this basin consists of low hills approximately 40 km south of Oaxaca City (the present state capital, which is situated at the center of the valley) that gently divide the Valley of Oaxaca from the Ejutla Valley. Looking south from Monte Albán on a clear day, one can easily see these low hills in the distance. The Atoyac River exits the southern end of the Valley of Oaxaca west of these hills. The Ejutla Valley, the Miahuatlán Valley (immediately south of Ejutla), and the Sola Valley (west of Ejutla) form the middle basin of the Atoyac River (see Fig. 2.1). The Ejutla, Miahuatlán, and Sola Rivers drain into the Atoyac before that longer river turns sharply to the west and begins its final descent out of the highlands to the coast.

Yet, in contrast, when traveling the main highway from Oaxaca City to Ejutla, one is hardly aware of passing from Oaxaca into the Ejutla district, so gradual is the broad divide between the two valleys. High mountain ridges define the eastern and western edges of both areas, with no topographic feature forming a well-defined boundary between them. In fact, the major topographic feature along the highway is not the Ejutla–Oaxaca watershed boundary but rather a ridge that juts out from the eastern mountains and separates the southern, Ocotlán district of Oaxaca from the rest of the valley to the north. On the route that follows the highway, the

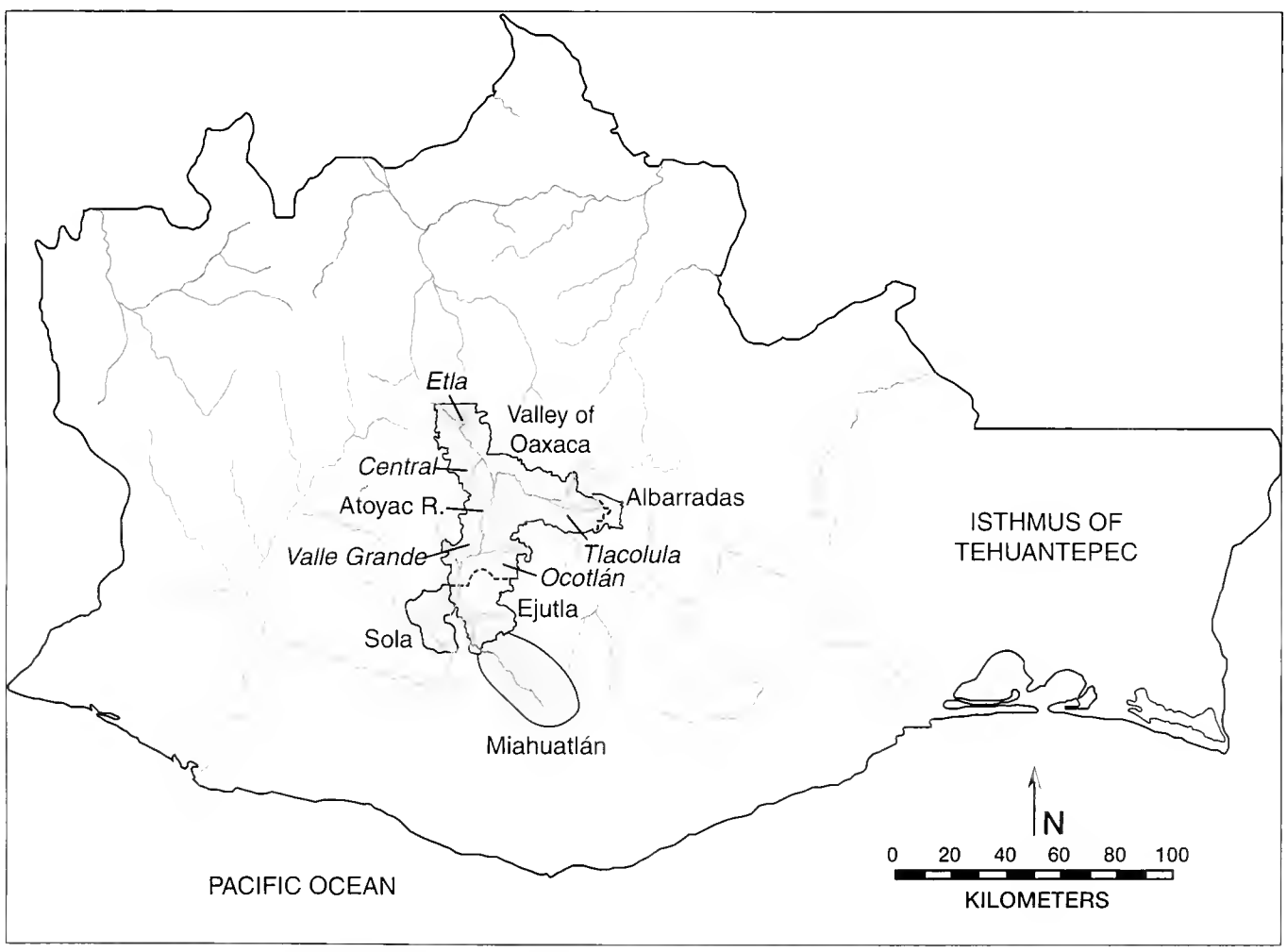



FIG. 2.1. The Central Valleys of Oaxaca and principal subareas of the Valley of Oaxaca.

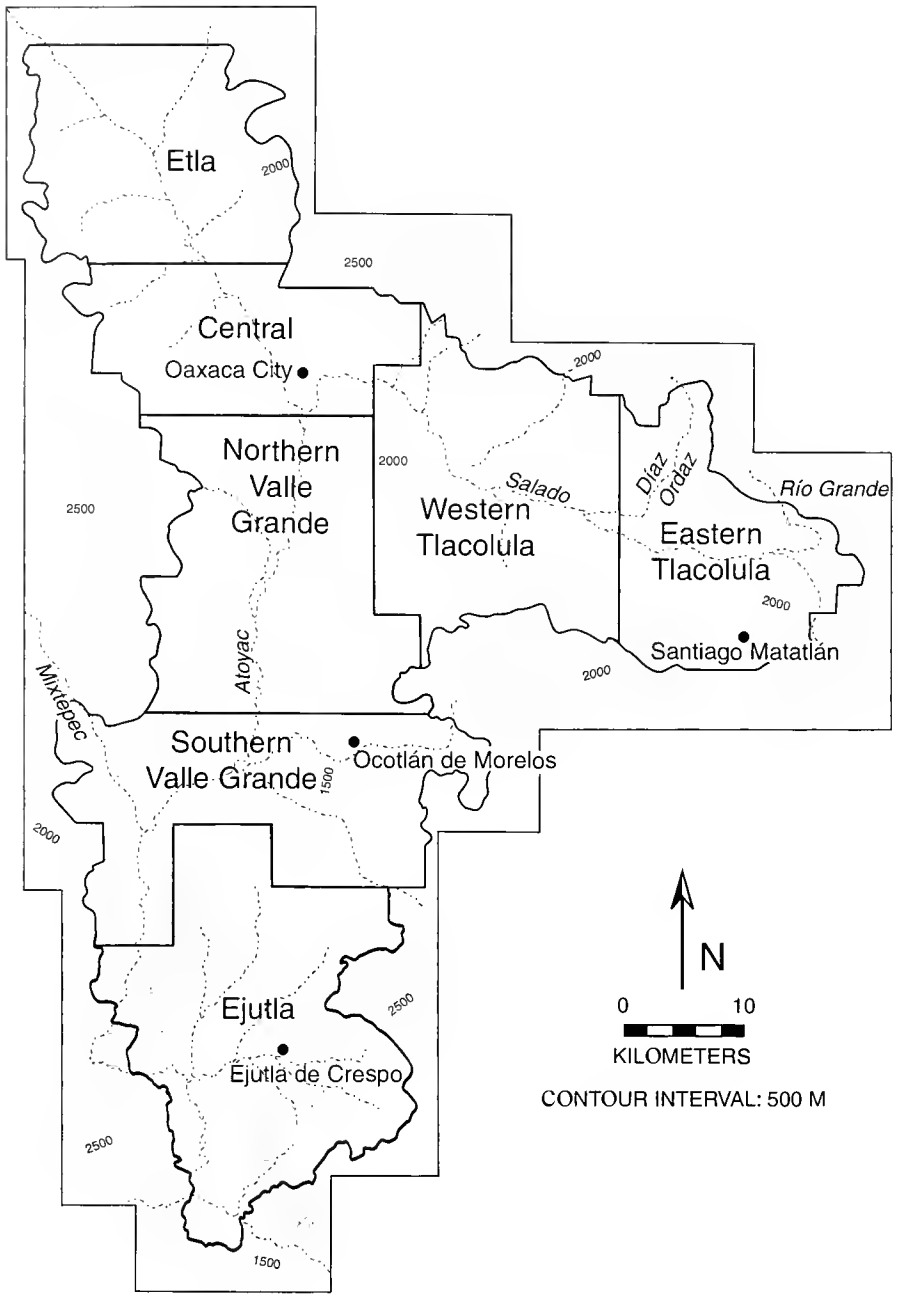



FIG. 2.2. Seven subregions of the Oaxaca and Ejutla Valleys.

Ejutla Valley appears to be a southern extension of the Ocotlán subarea. The strongest sense one has when driving to the district capital (Ejutla de Crespo) from the north following this route is of gradually declining elevation; the floor of the southern part of the Valley of Oaxaca ranges from 1500 to 1600 m, whereas the floor of the Ejutla Valley lies between 1400 and 1500 m. If you continue beyond Ejutla de Crespo, the hills that rise up at the southern edge of the Ejutla Valley provide a clearer edge to this large valley system.

## Environmental Setting of Oaxaca and Ejutla

The Valley of Oaxaca contains the largest expanse of flat farmable land in Mexico's Southern Highlands. There are fewer broad stretches of level alluvial floodplain in the smaller and narrower Ejutla Valley, where much of the terrain comprises low, rolling piedmont hills. The climate in these upland valleys is semiarid and free of frost. The slopes and soils permit farming almost everywhere across these valleys, so that access to water is the limiting factor for agriculture (Kirkby, 1973). Most of the Valley of Oaxaca receives more rain than the Ejutla Valley. The critical per annum quantity of average precipitation needed for the reliable rainfall farming of maize is 700 mm. Only about 35% of the Valley of Oaxaca lies outside the 700-mm isohyet, whereas approximately 90% of the Ejutla Valley receives less than this critical amount. Yet even for Oaxaca, the average rainfall on the valley floor is marginally adequate for corn, and there is great variability and unpredictability across the entire region. Areas where irrigation is possible can be very productive, often producing two crops a year. The Valley of Oaxaca has proportionally more prime irrigable land than Ejutla, yet Ejutla does have larger patches of irrigable land than some parts of the Valley of Oaxaca, especially the drier, eastern arm of the valley.

The large Valley of Oaxaca has considerable variability in terms of landforms, availability of water, expanses of good flat agricultural land, and natural resources (Kowalewski et al., 1989, pp. 20–24). The Y-shaped valley comprises three arms—the small Etla arm to the north, the large Tlacolula Valley to the east, and the broad Valle Grande to the south. The Valle Grande is further divided into several administrative subareas—Zaachila to the north, Zimatlán to the west (where the Atoyac River passes out of the Valley of Oaxaca on its way to Ejutla), and Ocotlán to the east. The Ejutla Valley abuts the Ocotlán subarea, from which it is separated by a series of low hills. The main highway from Oaxaca City passes through Ocotlán on its way to Ejutla and eventually the southern Oaxaca coast.

For analytical purposes, we divide the Valley of Oaxaca into six subregions that are not entirely consistent with the subareas mentioned above (Fig. 2.2). These units were formed to be more consistent in size and to incorporate increasing distance from the core of the valley but also to have geographic integrity (Feinman et al., 1985; Nicholas et al., 1986; Nicholas, 1989). The Etla subregion comprises most of the Etla Valley. The Central subregion includes the area around Oaxaca City and the pre-Hispanic capital, Monte Albán. The other two subvalleys are much larger and were divided into two parts—northern and southern Valle Grande and western and eastern Tlacolula. In many respects, the Ejutla Valley can be viewed as an additional southern subregion that is the farthest from the valley's hub. To provide greater context for our discussions of Ejutla and how that area compares to the different sectors of the valley, we provide brief descriptions of the six Valley of Oaxaca subregions (Nicholas, 1989).

### Etla

Although the Etla Valley is relatively narrow compared to the other arms of the valley, it has a wide alluvial floodplain (over 1 km wide in places) along the Atoyac River. The valley floor is surrounded by extensive eroded piedmont slopes on the north and west and by high mountain ridges of the Sierra Norte on the east. These higher slopes receive considerably more rainfall than the valley floor, most of which receives less than 700 mm of annual rainfall. The heavy mountain rainfall feeds six substantial permanent tributaries that flow into the Atoyac River in Etla. Many springs and the flow from these mountain streams provide excellent water sources for irrigation. Of all the subregions, Etla has the best possibilities for irrigation. So, in spite of lower rainfall on the valley floor, the alluvium in central Etla comprises one of the largest and best tracts of farmland in highland Oaxaca. Other irrigable patches are found in the adjacent piedmont. Several limestone outcrops can be exploited for building stone, and there are sources of chert and onyx (Whalen, 1986).

### Central

The valley floor at the center of this region is constricted on the west by a system of hills (on which Monte Albán was settled) and on the northeast by the Sierra Norte. The area

west of Monte Albán is heavily eroded piedmont. The three permanent streams in that area cross few broad swaths of irrigable land. This area is characterized by rolling slopes interspersed by narrow strips along arroyos that appear as green ribbons in an undulating brown landscape. The alluvial plain east of Monte Albán where modern Oaxaca City is located has no permanent tributary streams. Although floodwater farming may have been possible in the pre-Hispanic past, large-scale canal irrigation probably was not. Most of the Central subregion receives less than 700 mm of rainfall per annum; without irrigation potential in the past, this area had a smaller amount of productive farmland land than Etla or either Valle Grande subregion. The most fertile sector of this subregion is a small patch east of Oaxaca City, where the Salado River, which drains the Tlacolula Valley, joins the Atoyac River (cf. Winter, 2011, p. 398).

#### Northern Valle Grande

South of Oaxaca City, the Valle Grande comprises the widest (2.5–4 km) stretch of alluvium in the entire region. Some of this floodplain may have been marshy in the past, so, per unit of area, the Etla alluvium may have been more productive (Kowalewski, 1982, p. 152; Kowalewski et al., 1989, p. 21). Eroded piedmont slopes and high mountains define the western edge of this subregion. There are no large reliable streams here, but because this area receives slightly more rain than areas to the east, rainfall farming or irrigation along small arroyos is fairly productive. The piedmont slopes and the rugged mountains that separate the Valle Grande from the Tlacolula arm define the eastern edge of valley floor. The arroyos on this side of the Valle Grande are not substantial enough to support much irrigation farming.

#### Southern Valle Grande

This subregion comprises the southern part of the Valle Grande and most of Ocotlán. Although the alluvial area narrows considerably along the Atoyac River in the west, four main tributaries on the east have deposited soils over a wide (9–12 km) area near the modern district capital, Ocotlán de Morelos (Kowalewski et al., 1989, p. 22). Floodwater farming, high-water-table farming (pumps today and pot irrigation in the past), and canal irrigation are feasible in this area. The western side of the valley is defined by the high mountains that surround the Mixtepec River, a permanent stream in a canyon that provides a direct foot route to the mountains. The eastern part of the subregion is characterized by eroded hills with a few seasonal arroyos and permanent springs. Most agriculture today in this area depends on rainfall.

#### Western Tlacolula

The main river in the Tlacolula arm of the valley, the Salado River, differs from the Atoyac River in that it disappears as a channelized river and becomes a seasonal marsh. Today, agriculture has been abandoned in much of that area, which is now covered with *huizache* (*Acacia farnesiana*) and other low, spiny trees. The most fertile bottomland is situated along the western end of the Salado. The western edge of Tlacolula is defined by the same rugged mountains that border the eastern edge of the Valle Grande. These mountains have limestone outcrops that are important sources for building stone and lime. The lower slopes of these mountains are dry piedmont hills with no large arroyos. Although there is no alluvium close to these mountains as in Valle Grande, there are several basins where the water table is high. The rugged mountains on the north side of the valley have several permanent arroyos that provide excellent possibilities for floodwater farming. The mountains to the south provide less runoff.

#### Eastern Tlacolula

Average rainfall declines from west to east across the Valley of Oaxaca so that eastern Tlacolula is the driest and least agriculturally productive subregion, especially for maize. In this subregion, the Salado River is fed by two major tributaries. The Díaz Ordaz River flows from the mountains on the north and offers good possibilities for floodwater farming along its course. The Río Grande of Mitla, which flows from a drainage basin on the east, is a reliable stream with a broad piedmont. Floodwater farming is possible along this tributary. The mountains to the south provide less runoff. The wide area bordered by these mountains and the Salado River floodplain is almost an entirely dry, stony piedmont. Only dry farming is possible on the low piedmont, with small areas of irrigation in higher areas supported by spring-fed arroyos. The arroyos in the southeastern most part of Tlacolula are almost always dry. Maguey (*Agave* spp.) fields are more numerous than milpas, and uncultivated lands are common. There are many chert sources of varying quality in eastern Tlacolula. A large outcrop of limestone near Santiago Matatlán was heavily used for building stone in the past, and numerous stone quarries provided large blocks that were used in the construction of pre-Hispanic palaces and tombs (Robles García, 1994).

### The Ejutla Valley

The Ejutla Valley is a small alluvial basin at the southern edge of the Valley of Oaxaca. High mountain ridges define the western, southwestern, and eastern edges of the valley, while low hills separate Ejutla from Oaxaca to the north and Miahuatlán to the south (Fig. 2.3). Two mountains most clearly define the Ejutla region. Cerro Piedra de Lumbre, on the southwest, is part of the high mountain range that extends along the entire western edge of the central valleys, from the northern (Etla) arm of the Valley of Oaxaca south to the Miahuatlán Valley. The other feature, Cerro El Labrador, on the northeast, is part of a more broken series of mountain ranges that defines the southern edge of the Tlacolula arm of Oaxaca, eastern Ejutla, and eastern Miahuatlán. Both mountains rise to more than 2500 m.

More rain falls in the mountains than in the piedmont or alluvial zones, yet steep slopes limit cultivation, and today most of the mountain slopes are covered with dense stands of oak/pine forests and are used mostly for collecting wood and making charcoal. The piedmont zone between the mountains and the valley floor generally has thin, rocky soils. A variety of cacti (e.g., *Opuntia* spp., *Myrtillocactus* sp., *Hechtia* sp., and *Stenocereus* spp.) and maguey (*Agave* spp.) grow on those slopes. The higher piedmont areas often are eroded and deeply cut by arroyos, whereas low piedmont areas are more suitable for agriculture. The broadest alluvial plain in the Ejutla Valley is along the Ejutla River, in the center of the valley (Fig. 2.4), but there are many smaller, narrower

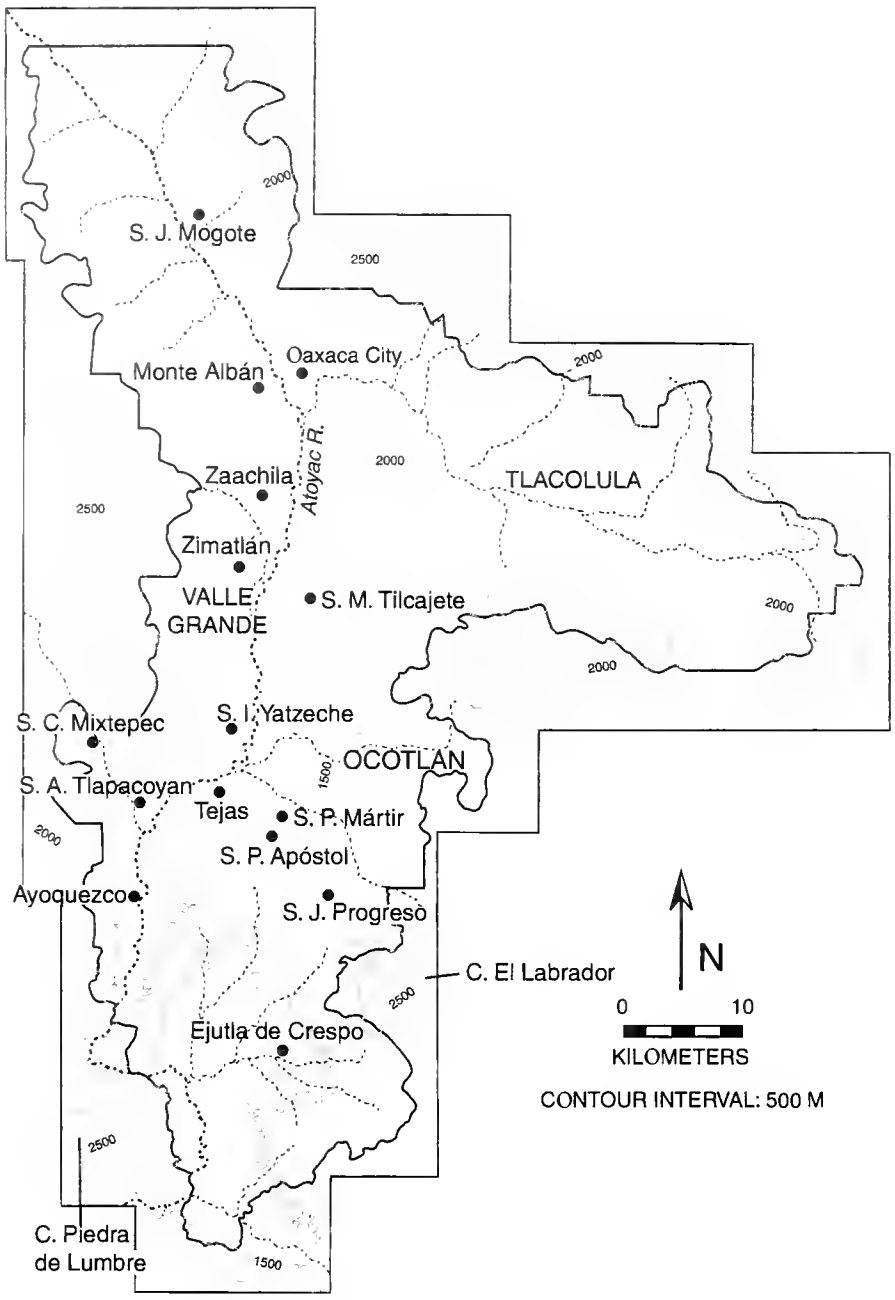



FIG. 2.3. Places in Oaxaca and Ejutla mentioned in the text.

stretches of alluvium along its principal northern tributaries and the Atoyac River to the south (Fig. 2.5). Although potentially irrigable land is limited to these areas, the streams flowing out of the higher elevations where rainfall is more plentiful provide sufficient water for diverse agricultural crops including corn, alfalfa, tobacco, sugarcane, and even cotton in some areas. In this sense, the Ejutla Valley is more similar to the Etla arm than to other parts of the Valley of Oaxaca. Some of these Ejutla plots are very productive (Esteva, 1913); one village on a northern tributary is even named El Vergel (the garden; Fig. 2.6). A large hacienda was built there during the colonial period. In eastern Ejutla, water draining off El Labrador is channeled or controlled with check dams in several areas (Fig. 2.7).

Two main paths of linkage connect the Ejutla Valley with the Valley of Oaxaca to the north. Through time, we see changes in the relative importance of the two routes linking Ejutla to Oaxaca, with certain eras dominated by one or the other and other times characterized by heavy flows through both routes. One avenue, on the east, as we discussed above, passes through the low piedmont of Ocotlán into the alluvial Ejutla basin. This is where the first paved highway to the coast is routed today, likely following long-used conduits. The other, on the west, follows the Atoyac River, as does the modern secondary southern road out of the Valley of Oaxaca. The Atoyac travels south down the center of the broad Valle Grande until it is forced west near Tejas de Morelos by piedmont ridges in northwestern Ejutla that separate the Valle Grande from the Ejutla River drainage (Fig. 2.3). The river turns south again at Santa Ana Tlapacoyan and passes by Ayoquezco prior to exiting the Valley of Oaxaca. South of San Andrés Zabache, in western Ejutla, the river enters a narrow gorge formed by the high mountains to the west and the southern extension of the piedmont ridges that separate the Ejutla River drainage from the southern tip of the Valle Grande (Fig. 2.4). When it exits the gorge, the river turns east and enters the Ejutla Valley. The river turns south again near La Compañía, where the Ejutla River and its northern tributaries drain into the Atoyac, and follows the base of the high mountains on the western edge of the Ejutla Valley to the confluence with the Miahuatlán River west of Yogana in southern Ejutla. The Atoyac immediately heads west after that confluence and exits the Central Valleys of Oaxaca.

Even though the Ejutla Valley is much smaller than the Valley of Oaxaca, there is considerable variability in the area's terrain, water resources, modern land use, and the distribution of past and present populations. For analytical purposes, we divide Ejutla into seven subareas based on those variables (Fig. 2.8). In the interest of clarity, we note that "Ejutla" refers to four different entities that have neither coterminous boundaries nor equivalent scales: the Ejutla Valley, the contemporary Ejutla administrative district, the district capital, and the pre-Hispanic site under the modern town. Our survey was centered in the valley and the mountain slopes defining it and does not include all the terrain in the Ejutla district, a larger jurisdictional unit. When we speak of Ejutla or the Ejutla region, we are generally referring to the Ejutla Valley. We specify district in the text for the contemporary political entity. To avoid confusion, we refer to the modern district capital as Ejutla de Crespo and the pre-Hispanic settlement as the Ejutla site or by its field designation (EJ-EJ-EJ-1).

### Western Ejutla

The area south of Ayoquezco is physiographically the southernmost extension of the Valle Grande, but today it is part of the Ejutla district and is within the area we surveyed (Fig. 2.4). This area is bounded on the west by high, forested mountains that descend into eroded piedmont ridges near the Atoyac River and on the east by barren piedmont ridges that separate the Atoyac River drainage from that of the Ejutla River (Fig. 2.9). Here, the Atoyac is bounded by very narrow patches of alluvial land and small areas of gentle slopes and low hills. Water access is limited except adjacent to the Atoyac and a few major tributaries. During the 1980s, when we completed the survey, the water table was high enough near San Martín Lachilá to grow tobacco, although pumping for irrigation has greatly lowered water tables in many parts of the region today.

We recorded mica, quartz, and chert sources on the slopes of western Ejutla during the survey. The mica sources are part of a geological formation in the western part of the Valley of Oaxaca that extends from Etla in the north through Zimatlán, Sola de Vega, Ejutla, and Miahuatlán in the south. Collectively, these areas produced 95% of the national supply of mica in the early 1980s (Brito de Marti, 1982, p. 227).

There are only three modern villages in this part of the Ejutla region today, and all are located close to the Atoyac

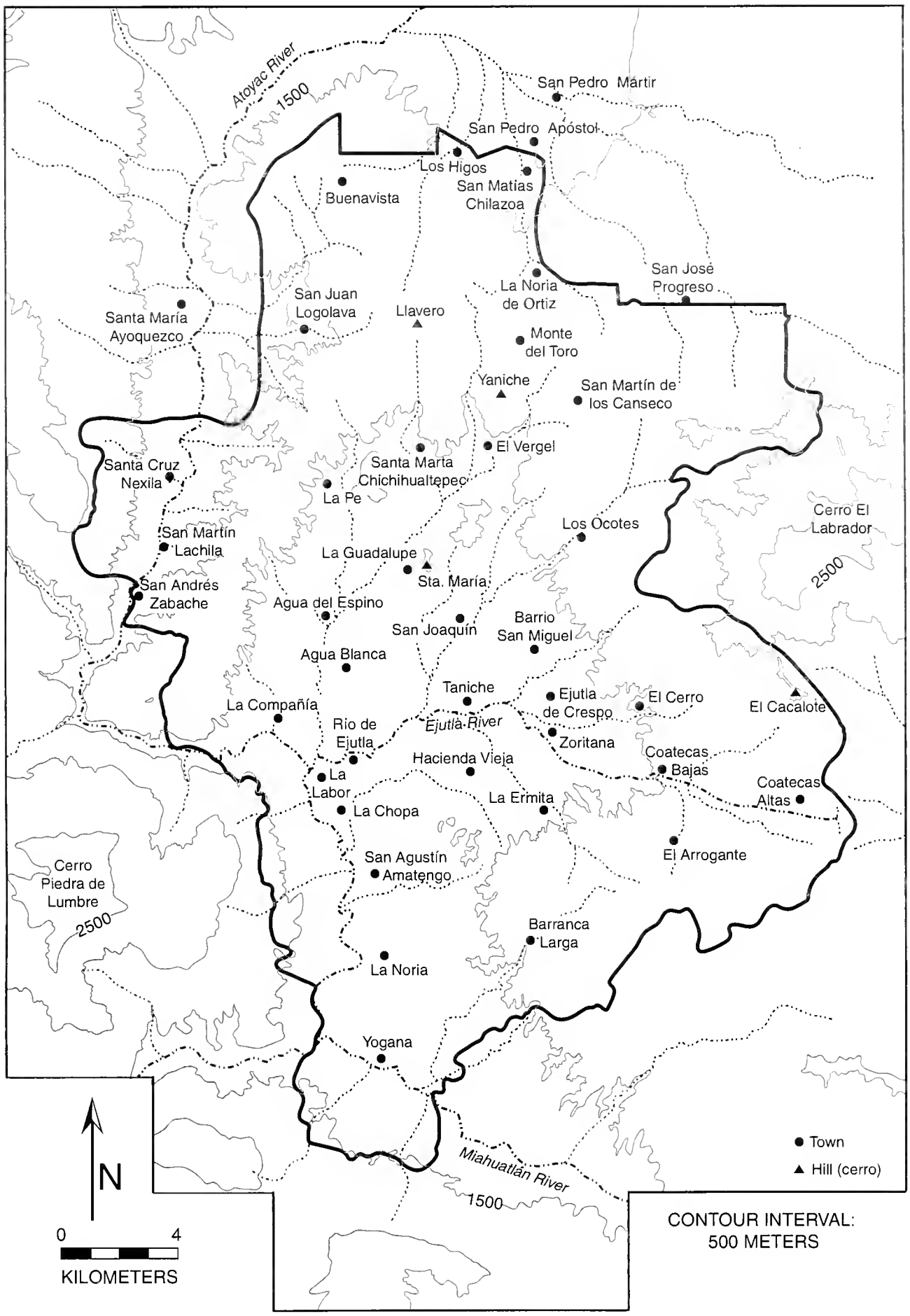



FIG. 2.4. Towns and villages in the Ejutla Valley survey region.

River and the modern highway, with extremely limited settlement in the hills on either side. There were colonial haciendas at San Andrés Zabache and Santa Cruz Nexila, both situated near the Atoyac (Fig. 2.10). We recorded only one large pre-Hispanic settlement there, also near the river. Many smaller sites were scattered throughout the alluvium and in the piedmont, especially on the western side of the river. Except for one terrace site on a ridge that descends very close to the Atoyac River, the barren hills on the east were sparsely populated in the past. The few ancient settlements on these hills faced toward the Atoyac and not in the direction of the Ejutla River drainage.

**Northern Ejutla**

The northern part of the Ejutla district largely comprises the low piedmont divide between the drainages of the Atoyac and Ejutla Rivers (Fig. 2.11) and extends on the southeast to the northern slopes of El Labrador. The water in the streams here drain north into the Atoyac and not south into the Ejutla River, and physiographically most of this watershed area could be considered part of the Ocotlán subarea of the Valley of Oaxaca.

Most agriculture in this subarea is rainfall dependent, although small-scale irrigation is possible along the larger

FIG. 2.5. Narrow strip of alluvium along the Atoyac River south of La Chopa in the Ejutla Valley.

tributaries. The area along the tributary between San Matías Chilazoa and La Noria de Ortiz is especially marshy in places (Fig. 2.4). There also are several modern reservoirs in the area.

The main highway to the coast passes through the eastern part of this area, and to the north beyond our survey boundary (inside the limits of Valley of Oaxaca archaeological survey area), there are many fairly large modern villages—San José Progreso, San Pedro Apóstol, and San Pedro Mártir (Fig. 2.4). The villages in Ejutla are smaller, but those located near the modern highway are thriving. Other small villages located farther west do not have good transportation routes to either of the modern highways. Several have lost significant population (e.g., Chilazoa) or were completely abandoned (Los Higos) before we completed the survey.

There is one colonial hacienda, Buenavista, in the area (Fig. 2.12). We recorded significant pre-Hispanic settlement in this area but only for the Late Postclassic period (Monte Albán V).

**North-Central Ejutla**

The barren piedmont ridges in northwestern Ejutla descend sharply to a large area of shallow piedmont slopes and small tributary streams that are surrounded by small areas of alluvium (Fig. 2.13). This broad area is bounded on the west by eroded hills and on the east by ridges that descend from the slopes of El Labrador. The small patches of alluvial land along the tributaries are well watered during the rainy season by runoff from higher piedmont ridges and the slopes of El Labrador, while the low hills between the patches of alluvial land are dry. There also are several modern dams in this area, which mostly collect water draining off El Labrador. Several areas in the northeast have more recently been terraced for agriculture.

Today, this part of the Ejutla Valley is heavily occupied, including the villages of La Pe, San Martín de los Canseco, San Joaquín, S. M. Chichihualtepec, El Vergel, La Guadalupe,

FIG. 2.6. Good alluvial farmland south of El Vergel.

FIG. 2.7. Check dams on a piedmont slope in eastern Ejutla, near Coatecas Altas.

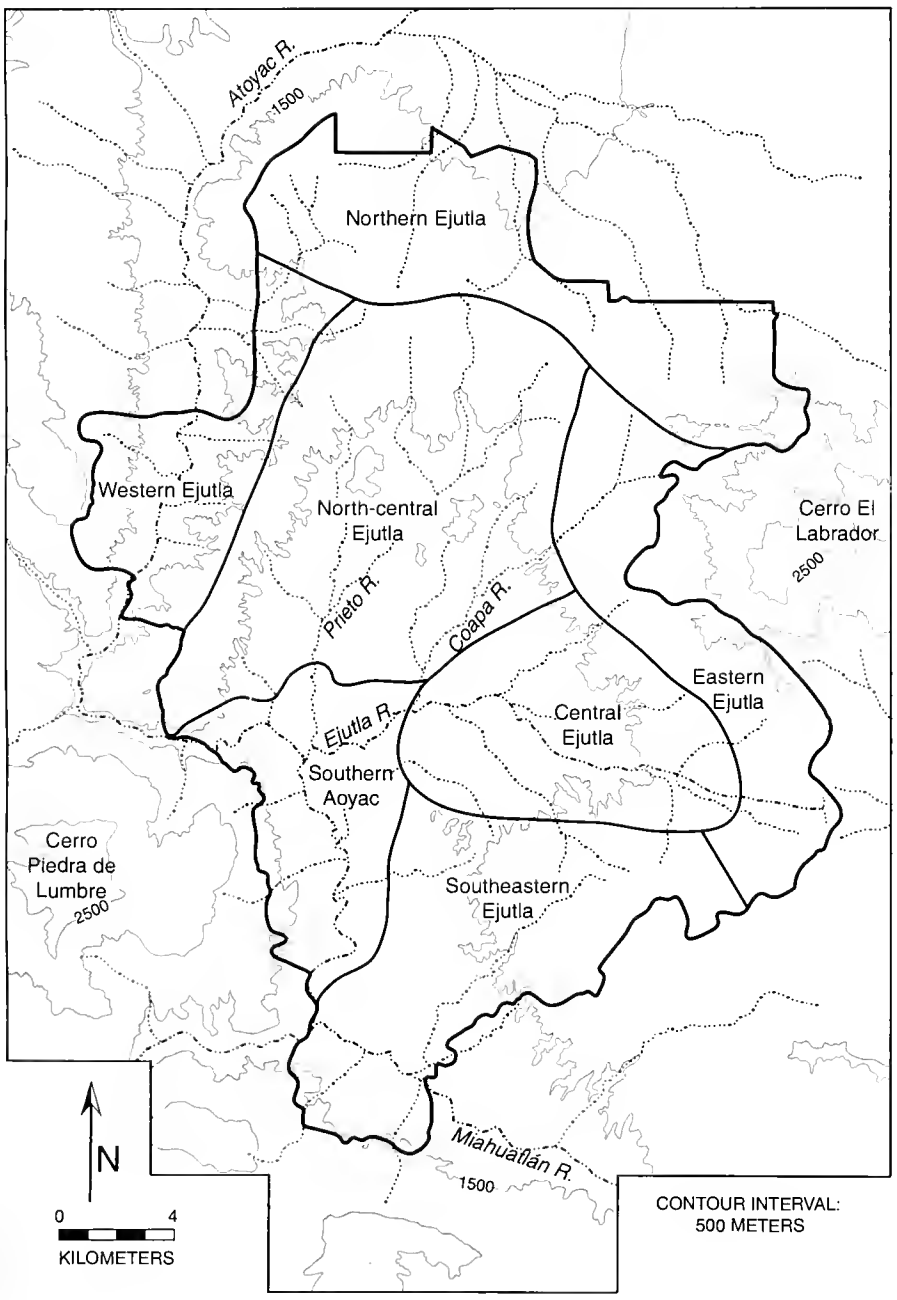



FIG. 2.8. Ejutla Valley subareas.

and others (Fig. 2.4). One village (San Juan Logolava) in the extreme western part, however, was slowly being abandoned at the time of the survey because of the same transportation/distribution problems affecting towns in northern Ejutla. Logolava is located near a broad swath of moist alluvial land on a small tributary that drains into the Atoyac River. But today there is no bridge across the Atoyac to reach the highway on the west side of the river. To reach the village, vehicles must travel in from the east along a dirt road that is more like an arroyo during the wet season. In rainy weather, it becomes impossible to reach the village except by foot or burro.

Five of the colonial haciendas in Ejutla—at La Pe, El Vergel (Fig. 2.14), La Guadalupe, San Joaquín, and Agua del Espino (Fig. 2.15)—are located in this subarea, all near good alluvial land along the major northern tributaries of the Ejutla River (for locations, see Fig. 2.10). Pre-Hispanically, this area also was the most heavily occupied, especially during the Classic period (Monte Albán IIIA). Even though the Ejutla Valley was sparsely occupied prior to Monte Albán IIIA, most of the pre-Monte Albán and Monte Albán Early I and Late I (Formative period) population settled in this area.

### Central Ejutla

This subarea comprises the main channel of the Ejutla River and the large patches of productive flat agricultural land that surround it near the modern town of Ejutla de Crespo (Fig. 2.16). Today, the river is deeply incised (more so to the west than to the east), but the water table in this area is high (but lower today than 40–60 years ago). The water table was as high as 1–2 m in many wells in the area at the time of the survey, and pump irrigation was routinely practiced. Beyond the good alluvial land are drier piedmont slopes. In addition to the productive milpas of corn, some truck gardening is practiced today, especially tomatoes.

There are several sources of stone east of Ejutla de Crespo that were exploited during the pre-Hispanic era, including

FIG. 2.9. Low ridge on the west side of the Ejutla Valley; the Atoyac River runs between the low hills and the mountains behind them.

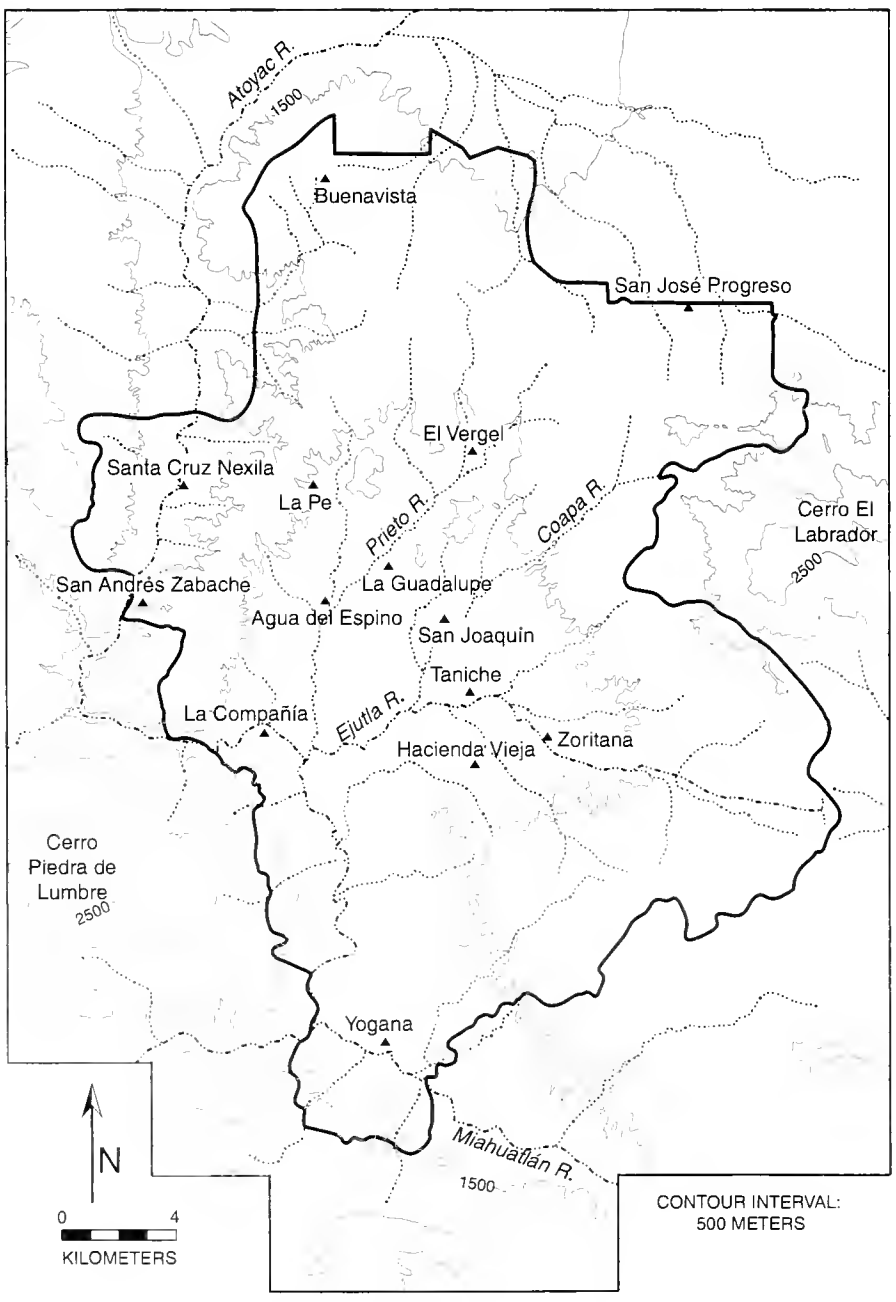



FIG. 2.10. Haciendas in the Ejutla Valley survey region.

a reasonably good-quality chert outcrop near El Cerro (Fig. 2.4). This stone was worked into microdrills for making shell ornaments and beads at the Ejutla site during the Classic period. Several kilometers east of Ejutla de Crespo are patches of whitish, layered marble (cipolin) in the underlying gneiss (Barrera, 1946, p. 87). We recovered small cylinders, or drill plugs, of this material at the Ejutla site during both the survey and the subsequent excavations that appear to be the by-products of making bowls or other objects from this stone source.

This sector of the Ejutla jurisdiction is most heavily populated today. Most of the population, however, resides in two towns—the district capital and Coatecas Altas—with only small, scattered villages and hamlets in the nearby piedmont zone. This area also was the most heavily populated part of the Ejutla region in the Late Postclassic period. Unlike north-central Ejutla, we did not record any sites earlier than Monte Albán Early I in this area. The largest ancient settlements were along the Ejutla River at Taniche and Ejutla de Crespo. It was near the heaviest Late Postclassic settlements that three colonial haciendas were built, at Taniche (Fig. 2.17), Zoritana (Fig. 2.18), and Hacienda Vieja.

### Eastern Ejutla

El Labrador and its heavily wooded slopes define the eastern edge of the Ejutla River drainage. A long narrow ridge extending south of El Labrador marks the eastern edge of the Ejutla Valley and forms the watershed boundary between the Atoyac River basins to the west and the Río Grande and the Tehuantepec River to the east (Rodrigo Alvarez, 1983, p. 46; Fig. 2.19). The steeper slopes of El Labrador are used mostly for wood collection, while the bottom slopes are farmed (Fig. 2.20). Today, modern villagers take advantage of the runoff from the steep slopes for irrigation, using both check dams in some areas and pump irrigation in others. Especially along the southern slopes, there is much truck gardening along the larger arroyos. Some of the lower slopes have many agricultural terraces.

FIG. 2.11. Piedmont ridge in the northwestern part of the Ejutla Valley (viewed from the southeast); mountains in the background define the western edge of the Valley of Oaxaca.

FIG. 2.12. Hacienda at Buenavista.

There is very little modern occupation on these slopes, except for Los Ocotes in a small valley to the north (Fig. 2.4). The northern part of this area has deposits of copper and silver; many mines for these ores were established around Los Ocotes in the past (Fig 2.21; Barrera, 1946, pp. 84–85). They were all abandoned years before we began the archaeological survey. There was little pre-Hispanic occupation of this area until the Postclassic period. The southern slopes, north of Coatecas Altas, were heavily occupied during Monte Albán V, with most of the population concentrated in several large terrace sites.

**Southern Atoyac**

This subarea includes terrain where the Atoyac River enters the Ejutla Valley, from the west, and is joined by the Ejutla River and its northern tributaries (Fig. 2.22). Several smaller streams drain into the Atoyac south of this confluence. This

FIG. 2.13. Terrain in north-central Ejutla.

FIG. 2.14. Hacienda at El Vergel.

area is composed of small patches of alluvium along the Atoyac that are surrounded by steeply sloping, piedmont ridges, especially on the east. Although none of these patches are as large as on the Ejutla River, they are fertile, and water is plentiful. Many *palenques*, processing maguey into mezcal, were in operation here during the survey. Most of the rest of the land is not very productive, although dry farming is practiced on the lower piedmont slopes to the west.

Most of the modern population in this area lives near the Atoyac River, including several small settlements in addition to the larger villages of San Agustín Amatengo and La Compañía (Fig. 2.4). The pre-Hispanic population also was concentrated along the river. During the Terminal Formative (Monte Albán II), one of the three largest settlements in the Ejutla Valley was located along the Atoyac at Amatengo, while there was little occupation in the surrounding slopes. The largest colonial hacienda in all of the Southern Highlands was established in the northern part of this subarea, at La Compañía, on the south side of a large bend in the Atoyac River where there is a large patch of well-watered land (Figs. 2.23 and 2.24).

### Southeastern Ejutla

The southeastern part of Ejutla is separated from the Miahuatlán drainage by a high piedmont ridge that extends eastward to connect with the southernmost ridge of El Labrador; the small pass between the two ridges leads into the Río Grande drainage east of Coatecas Altas. This part of the Ejutla Valley consists of eroded piedmont slopes that descend, on the south, into the Miahuatlán Valley (Fig. 2.25). The Miahuatlán River passes through the southern tip of the Ejutla survey area just before its confluence with the Atoyac River (Fig. 2.4). Today, this area is part of the Ejutla administrative district, and the principal town in the area, Yogana, is much closer to Ejutla de Crespo (less than 15 km) than to Miahuatlán (24 km). The piedmont ridges in this area, in both Ejutla and Miahuatlán, have steeply sloping sides, with deeply entrenched arroyos, few of which have much water even during the rainy season.

There is very limited occupation of the area today, mostly scattered homesteads. The only hacienda located in this part of the region was near Yogana. We also recorded very little pre-Hispanic settlement in the area; in fact, this area contains the largest swath of land in the Ejutla Valley with absolutely no pre-Hispanic occupation. The settlements we did record were located either along the Miahuatlán River—one of the three largest Monte Albán II (Terminal Formative) sites was near the modern village of Yogana—or on the top of the high piedmont ridge to the east, where we recorded several small defensive and/or terrace sites pertaining to the Classic and Postclassic (Monte Albán IIIA and V).

## Ejutla's Historical Relationship to Oaxaca

The political history of Oaxaca is complex, and the jurisdictions to which the Ejutla Valley belonged have shifted many times since the Spanish Conquest (Ordóñez, 2000). In the 16th century, the Valley of Oaxaca was a patchwork of *encomiendas* (grants of land and inhabitants to conquistado-

FIG. 2.15. Remnant of the hacienda at Agua del Espino.

FIG. 2.16. Ejutla de Crespo and the central Ejutla Valley.

res); the Ejutla Valley was divided between two of them (Gerhard, 1993, p. 49). Later, when the *encomiendas* were grouped into larger civil jurisdictions, most of the modern Ejutla district, including the district capital, belonged to Antequera (Oaxaca City); the Coatecas area of eastern Ejutla was assigned to Miahuatlán (Acuña, 1984, p. 75; Gerhard, 1993, p. 21).

In the mid-18th century, Ejutla de Crespo was one of 13 *cabeceras* (administrative centers) under the jurisdiction of Antequera. The Ejutla *cabecera* governed a small area, including nearby San Miguel and San Agustín Amatengo in southern Ejutla; San Juan Logolava, Santa Cruz Nexila, and San Andrés Zabache in western Ejutla were subject to the Santa María Ayoquezco *cabecera* in the southwesternmost part of the Valley of Oaxaca, whereas San Martín de los Canseco, near the watershed boundary to the north, was subject to Ocotlán (Gerhard, 1993, p. 51; Fig. 2.4). Later, in the early 19th century, the Valley of Oaxaca was divided into eight large administrative departments, with all of Ejutla (and even Ocotlán) belonging to Miahuatlán (Hamnett, 1971, pp. 188–189; Ordóñez, 2000, p. 76). It was not until the early part of the 20th century that the modern Ejutla district was created (Ordóñez, 2000, p. 77).

In addition, ecclesiastical jurisdictions show little historical agreement with civil ones. In the late 18th century, the parish centered in Ejutla de Crespo included southern Ejutla as well as villages in eastern Ejutla (Coatecas) and northern Miahuatlán that were politically subject to Miahuatlán (Gerhard, 1993, p. 189). Other areas that today are part of the Ejutla district were not part of the Ejutla parish.

Historically, Ejutla has had strong economic ties to the Valley of Oaxaca. But whether Ejutla should be viewed as a southern extension of the Valley of Oaxaca, a gateway, or a

FIG. 2.17. Hacienda at Taniche.

FIG. 2.18. Hacienda at Zoritana.

FIG. 2.19. Ridge descending from El Labrador that defines the eastern edge of the Ejutla Valley (looking south).

separate subsystem is less clear. The distribution of haciendas and 17th-century populations indicate that, at least at that time, the region may have been a strategic southern extension. Haciendas were established across the Central Valleys of Oaxaca in the colonial period, with the greatest number built around the capital (Oaxaca City) and south into Ejutla (Table 2.1 and Fig. 2.10). Half (nine) of the haciendas in the Ejutla district were established in the central Ejutla Valley along the Atoyac and the Ejutla River and its major tributaries, including two of the largest haciendas in the Southern Highlands, at El Vergel and La Compañía (Figs. 2.14 and 2.23; Esteva, 1913). All these estates were situated near good agricultural land and water resources. Large ornate buildings were constructed at many of these haciendas. In the 17th century, the southern part of the Valley of Oaxaca was more heavily populated than most of the rest of the valley (Kowalewski, 2003a). Although we do not have comparable population information for Ejutla at that time, the presence of so many haciendas in central Ejutla (with their labor requirements) provide evidence that higher population densities may have extended south into Ejutla as well. Populations likely were much lower in the southern Ejutla Valley at that time, as they remain today.

When the railroad was constructed at the turn of the 20th century, connecting Oaxaca to the north, its southernmost terminus was Ejutla (Garner, 1995, p. 5). The northern part of the Ejutla Valley has deposits of copper and silver (Barrera, 1946, pp. 84–85) and was one of several principal mining regions in the central valleys that were connected to Oaxaca City via railroads (Garner, 1995, p. 12).

Ejutla also can be viewed as a gateway into the Valley of Oaxaca (White & Barber, 2012). Although Ejutla is part of the

FIG. 2.20. Lower slopes of El Labrador in eastern Ejutla.

FIG. 2.21. Abandoned mine shaft and colonial buildings near Los Ocotes.

landlocked central valleys, it is closer to the Pacific Coast than the Valley of Oaxaca and is situated along two routes to the coast through which products could be transported into the valley system. The first paved road to the southern Oaxaca coast follows one of them, passing through Ejutla and then Miahuatlán before reaching the coast. During the survey of the Ejutla Valley, we found anomalous concentrations of Pacific Coast marine shell at the Ejutla site, which most likely was brought into the valley along this route to be worked into trade objects (Feinman & Nicholas, 1992a). The second route was over the low hills defining the eastern edge of the Ejutla Valley into the headwaters of the Río Grande, which drains into the Tehuantepec River. That river was an important pre-Hispanic communication route (Ball & Brockington, 1978).

Today, Ejutla de Crespo is an active market in the Valley of Oaxaca system of weekly markets (Beals, 1975, p. 47; Diskin, 1976, p. 51; Malinowski & de la Fuente, 1982, p. 70). It has a long history as an important commercial location, serving as a transit center for coastal agricultural and other products entering the valley system (Barrera, 1946, pp. 85–86; Beals, 1975, p. 128). In the 1960s, the Ejutla market was known for its own important products, including tanned leather, animal skins, and castor beans and oil (Barrera, 1946, p. 86; Beals, 1975, p. 297). Yet during the same era, the Ejutla market had the highest percentage of vendors (in the eight major markets of the valley system) who served as middlemen, buying local produce in bulk to sell or bringing in goods from distant places instead of selling their own produce or goods (Diskin, 1976, pp. 59–60). The high proportion of middlemen in Ejutla is indicative of the region's position as a gateway between a highland valley system and the mountains and coast to the south.

Contemporary Ejutla is politically, culturally, and economically tied to the Valley of Oaxaca. It is not unusual for the mayor of the district capital to reside principally in Oaxaca City, even during his term of office. Ejutla is connected to Oaxaca City via a bus system that offers service every 20 minutes. Yet Ejutla is spatially distant from the capital city, and in his study of the contemporary Oaxaca market system, Ralph Beals (1975, p. 44) was unsure as to whether the market in Ejutla de Crespo should be considered a southern extension of the Valley of Oaxaca market system or a separate subsystem (along with the Miahuatlán market) more loosely integrated with the valley proper.

Beals's somewhat uncertain position on Ejutla accurately reflects the nature of the region. Environmentally, it is neither like the broad Valley of Oaxaca nor as rugged as the mountainous areas that abruptly demarcate and surround the Valley of Oaxaca on all other sides. The density of contemporary population in the Ejutla Valley also is intermediate between the high levels in the Valley of Oaxaca and the sparse population in the surrounding mountains. We know less about Ejutla than the Valley of Oaxaca during the last five centuries, but what is known suggests that the Ejutla Valley was neither entirely politically or economically integrated into the Valley of Oaxaca nor totally autonomous (Hamnett, 1971; Taylor, 1972).

Given the complex historical relationship between Ejutla and its larger, northern neighbor and the absence of information on Ejutla's pre-Hispanic past, it was not possible to assess the antiquity or the nature of the relationship between Oaxaca and Ejutla or its strength prior to the colonial period. Today, we do not consider the distance between Ejutla de Crespo and Oaxaca City (~60 km) that far, just over one hour by car today, but our older workmen in Ejutla recounted

FIG. 2.22. Area in southern Ejutla near La Compañía.

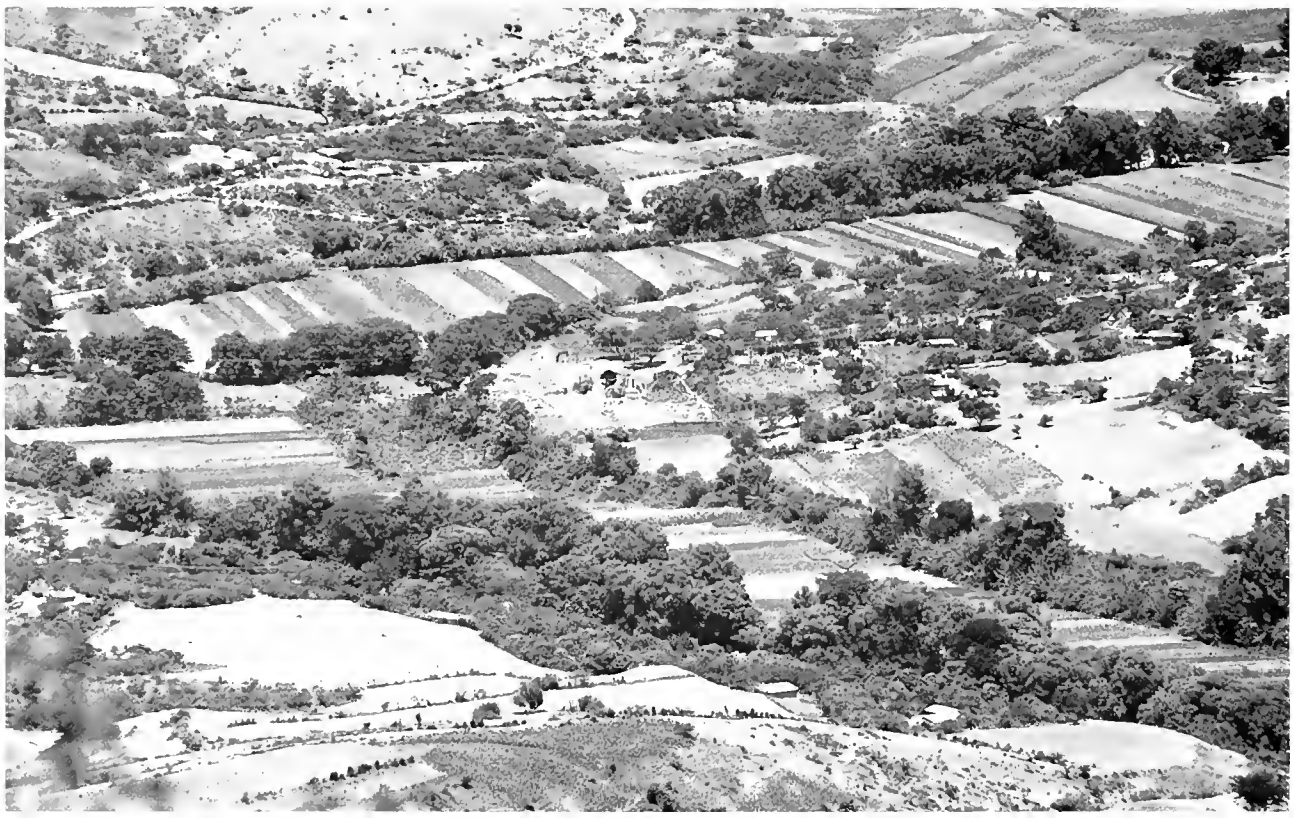


FIG. 2.23. Hacienda at La Compañía situated in area of productive farmland.

to us that, at the beginning of the 20th century, it took their fathers about five days to walk the round-trip between Ejutla de Crespo and Oaxaca City and four days with a horse and cart. The pre-Hispanic trip was undoubtedly at least as time consuming.

## The Prior Pre-Hispanic Record in Ejutla

Almost nothing was known about the pre-Hispanic past of the Ejutla Valley when we began the survey in the middle 1980s. The area had seen very little archaeological research since the first decade of the 20th century, when Leon Diguet (1905) reported a cruciform tomb (most likely dating to the Postclassic period) in the center of Ejutla de Crespo. More than half a dozen mounds in the center of town have survived since the pre-Hispanic era. Because of modern destruction and down cutting of the mounds in the center of town, we could not determine the specific structure that Diguet excavated (see also Sellen, 2003).

FIG. 2.24. Colonial building on the hacienda at La Compañía.

Prior to the Ejutla Valley Settlement Pattern Project, the most comprehensive study of the Ejutla Valley was conducted in the 1950s by Ignacio Bernal, who extended his archaeological reconnaissance of the Valley of Oaxaca into the Ejutla district where he recorded pre-Hispanic mounds or carved stones at 21 locations. Although those data were never published, Bernal (1965, 1983) passed his notes onto students and archaeologists working in Oaxaca. One site not visited by Bernal was initially reported in a 1939 Archaeological Atlas (García and Palacios, 1976, p. 37), and six other sites were noted only in records from the 1970s at the Centro Regional de Oaxaca (Instituto Nacional de Anthropología e Historia, or INAH) in Oaxaca City (Table 2.2 and Fig. 2.26). Most of these sites were known through reports of looting that were later checked out by guardians employed by INAH. Other than general location and whether there were one or more mounds, the record of archaeological information regarding these sites was limited and did not include maps, artifact collections, or systematic measurements of size. The majority of the sites in these early compendia were undated. For those that had temporal information, all but one was chronologically placed toward the end of the pre-Hispanic sequence. Even for the most widely known site, at Ejutla de Crespo, we knew little of its history beyond the tomb reported by Diguet and the tall mounds in the center of town that are mentioned in Bernal's notes. In Bernal's time, the tallest mound was at least 9 m high and built of adobe; several stucco floors exposed in the side of the mound yield evidence that there were several episodes of construction (Fig. 2.27).

Considering how little archaeological work had been done in Ejutla, the presence of almost three-dozen sites with architecture in the relatively small Ejutla Valley suggested that the Ejutla region had significant occupations during at least portions of the pre-Hispanic era. Most of the sites that were known in Ejutla prior to our survey were situated in lower elevations (alluvium and low piedmont), whereas many of the large important sites in the southern end of the Valley of Oaxaca (adjacent to Ejutla) were hilltop terrace settlements located at higher elevations (Blanton et al., 1982; Kowalewski

FIG. 2.25. Piedmont slopes in the southeastern Ejutla Valley.

et al., 1989). Of the known sites in Ejutla before our study, only one was a settlement that included terraces. Yet when we perused the 1:20,000 air photographs of the area, we identified other possible locations with terraces.

Bernal's reconnaissance and later visits to sites in Ejutla did illustrate that most of the pottery found in the region generally corresponded to ceramic varieties known and dated from archaeological sites in the Valley of Oaxaca (Caso et al., 1967; Bernal & Gamio, 1974). Archaeological studies farther south in Miahuatlán (Brockington, 1973; Markman, 1981) also revealed ceramic complexes that are generally comparable to those known from the Valley of Oaxaca, although Donald Brockington (1973, p. 10) did note specific differences between the ceramics of the two regions. When we began, we did not know whether fuller ceramic assemblages from the Ejutla Valley would also include attributes seen in Miahuatlán.

Syntheses of ethnohistorie sources for the late pre-Hispanic period also did not provide much specific information on the Ejutla Valley. Yet the area was undoubtedly affected by the web of economic and political interconnections that linked the Valley of Oaxaca with more southerly regions such as Miahuatlán (Spores, 1965). Before we began, we suspected that the dense concentration of Late Postclassic (Monte Albán V) settlement that continues right down to the southern boundary of the Valley of Oaxaca Settlement Pattern Project (Kowalewski et al., 1989, map 8) would likely continue south, indicating that at least northern Ejutla was tied in with Valley of Oaxaca polities at that time.

Certain linguistic reeonstructions (Whitecotton, 1977, p. 16) group at least the southern half of Ejutla with the Southern Zapotec dialect speakers, whereas the northern part of the Ejutla region is included with the Valley of Oaxaca as a Valley Zapotec–speaking area. Since historical estimates place the split between Valley and Southern Zapotec in the Postclassic period (Rendón, 1967), the Ejutla region may have been a behavioral frontier at that time. Other studies (summarized by Spores, 1965, p. 963), however, place the linguistic break south of Ejutla, closer to Miahuatlán. It was our aim to employ systematic, full-coverage survey procedures in Ejutla to obtain diachronic settlement distributions that would enable us to assess the relationship between these two adjacent regions during the Postclassic as well as earlier. In a sense, our questions regarding the past were not that different than some of the issues that are cause for debate today. In what senses did Ejutla serve as a gateway for the larger valley system? In what respects was it a frontier or extension of the region to the north? Most importantly, how did these networks and relations shift over time? We also aimed to consider whether shifts in the nature and intensity of the relations between the Ejutla Valley and the neighboring region to the north might shed light on key political and economic transitions that occurred in the Southern Highlands, such as the rise and fall of pre-Hispanic Monte Albán and the political and economic reorganization of the Valley of Oaxaca that occurred during the later Postclassic period (e.g., Feinman, 1997, pp. 36–37, 1999b).

With this background, we implemented a settlement pattern survey in the Ejutla Valley in 1984 and 1985. In the next chapter, we provide historical and methodological background to regional survey in Mesoamerica and, more specifically, in Oaxaca. We then describe the field and laboratory methods that we employed during this investigation, with a key aim being comparability of data between the survey of Ejutla and that undertaken in the larger valley to the north (Blanton et al., 1982; Kowalewski et al., 1989). We conclude the following

TABLE 2.1. Haciendas in the Ejutla Valley survey region.

| Hacienda | District | Hectares* |
|---|---|---|
| Yogana | Ejutla | 3,305 |
| El Vergel | Ejutla | 30,200 |
| La Pe | Ejutla | 1,370 |
| Taniche | Ejutla | 1,250 |
| Savache (Zabache) | Ejutla | — |
| La Compañía | Ejutla | 50,908 |
| Nexila | Ejutla | — |
| San Joaquín | Ejutla | 252 |
| La Guadalupe | Ejutla | 168 |
| Zoritana | Ejutla | 70 |
| Hacienda Vieja | Ejutla | — |
| Agua del Espino | Ejutla | — |
| Buenavista | Ocotlán | 2,586 |
| San José Progreso | Ocotlán | 3,380 |

*Size estimates (Esteva, 1913).

TABLE 2.2. Archaeological sites recorded in the Ejutla Valley prior to the regional survey.

| Site no. | Location | Local names | Archaeological remains | Phase | Sources | EJ survey no. |
|---|---|---|---|---|---|---|
| 1 | hilltop between San Joaquín, El Vergel, and La Guadalupe | Los Cerritos | 11 mounds, building stone, pottery, urns, obsidian | III–IV | UW pilot study, 1983; Bernal files, 1960 (#244); INAH files, 1975 (#4); García & Palacios, 1976 (#344) | EJ-EJ-SJ-6 |
| 2 | hilltop south of El Vergel | Los Mogotes | 6 mounds, building stone, pottery, urns | III–IV | UW pilot study, 1983; Bernal files, 1960 (#243); INAH files, 1975 (#3); García & Palacios, 1976 (#798) | EJ-EJ-SJ-6 |
| 3 | hilltop and slopes of Cerro Yaniche | Cerro Yaniche | mounds | ? | Bernal files, 1960 (#242); García & Palacios, 1976 (#143) | EJ-EJ-EV-2 |
| 4 | Cerro del Llavero, west of Monte del Toro | Mogote de las Azucenas | mounds, terraces, figurines (sculptures removed?) | ? | UW pilot study, 1983; Bernal files, 1960 (#241); García & Palacios, 1976 (#106) | EJ-EJ-SMC-6 |
| 5 | hilltop north of Monte del Toro | — | stone walls, pottery, possible burial | ? | Bernal files, 1960 (#240); García & Palacios, 1976 (#482) | EJ-EJ-MT-10 |
| 6 | Barranca de Ziquiche, near Yogana | El Panteón de los Antiguanos | ? | ? | Bernal files, 1960 (#273) | outside area |
| 7 | Yogana, on hilltop northwest of Barrio de Arriba | El Mogote del Higo | earthen mounds, terraced platforms, stucco floor with red paint, cave with painting, carved stone | I–V | Bernal files, 1960 (#241); INAH files, 1976 (#8); Markman, 1981 (#401); García & Palacios, 1976 (#833) | EJ-YO-YO-12 |
| 8 | Yogana | — | pottery, urn fragment | IIIB–IV | Bernal files, 1960 (#271); García & Palacios, 1976 (#834) | EJ-YO-YO-17 |
| 9 | near La Noria | Pueblo Viejo | 2 house mounds, very little pottery | V | Bernal files, 1960 (#270); INAH files, 1975 (#9); Markman, 1981 (#502); García & Palacios, 1976 (#508) | EJ-YO-YO-1/2 |
| 10 | La Chopa | — | burial mound with large tomb, stucco staircase, incense burner, pottery | IV | Bernal files, 1960 (#269); García & Palacios, 1976 (#232) | EJ-LC-LL-2 |
| 11 | near La Chopa | El Encanto, El Cerro Encantado | small mounds, tomb | ? | Bernal files, 1960 (#268); García & Palacios, 1976 (#245) | EJ-LC-LL-2 |
| 12 | La Soledad Amatengo (barrio of S. A. Amatengo) | — | 5-m-high mound, stucco and building stone | ? | Bernal files, 1960 (#267); García & Palacios, 1976 (#20) | EJ-SAA-SAA-10 |
| 13 | San Agustín Amatengo | — | archaeological zone with 5 mounds, unworked stone | ? | Bernal files, 1960 (#266); INAH files, 1979 (#3); García & Palacios, 1976 (#21) | EJ-SAA-SAA-15 |
| 14 | west of San Juan Coatecas Bajas (Coatequitas) | — | large mound of earth and small stones | ? | Bernal files, 1960 (#265); García & Palacios, 1976 (#152) | EJ-EJ-EJ-42 |
| 15 | on Cerro de Cacalote and slopes, north of S. J. Coatecas Bajas | Cerro de Cacalote | mounds and terraces | ? | Bernal files, 1960 (#263); García & Palacios, 1976 (#80) | EJ-CA-CA-1 |
| 16 | north of Coatecas Altas | Puerto de Yovare, Loma del Chamiso, Llano del Guaje | ballcourt, tomb, stone "greca," pottery | ? | Bernal files, 1960 (#264); García & Palacios, 1976 (#629) | EJ-CA-CA-1 |
| 17 | near San Antonio de la Pe (La Pe) | Cerro de Vigallo? | small mound | ? | Bernal files, 1960 (#247); García & Palacios, 1976 (#138?) | EJ-LP-LP-2 |
| 18 | near La Guadalupe | — | mound, wall of stones | ? | Bernal files, 1960 (#246) | EJ-EJ-SJ-6 |
| 19 | hill of Sta. María, between Guadalupe and San Joaquín | — | mounds of earth with few stones, possible tomb | ? | Bernal files, 1960 (#245); García & Palacios, 1976 (#242) | EJ-EJ-SJ-6 |

TABLE 2.2. *Continued.*

| Site no. | Location | Local names | Archaeological remains | Phase | Sources | EJ survey no. |
|---|---|---|---|---|---|---|
| 20 | Ejutla de Crespo | — | 9-m-high mound with adobe and stucco, mound with tomb, stone monolith, carved stone, pottery | IIIA, IIIB–IV | UW pilot study, 1983; Bernal files, 1960 (#259); INAH files, 1974 (#2), 1978 (#4); García & Palacios, 1976 (#241) | EJ-EJ-EJ-1 |
| 21 | hilltop above the mine east of San Martín de los Canseco | La Escalera, La Sienigita | several mounds | ? | Bernal files, 1960 (#258); INAH files, 1975 (#6); García & Palacios, 1976 (#457) | OC-SJP-SJP-110 |
| 22 | hilltop northeast of San José la Huerta (El Cerro) | — | carved stone tiger and stone of sun | ? | Bernal files, 1960 (#260); INAH files, 1974 (#1), 1975 (#5); García & Palacios, 1976 (#121) | EJ-EJ-EC-4 |
| 23 | Barrio San Miguel | El Mogote | mound | ? | INAH files, 1975 (#7) | EJ-EJ-EJ-3 |
| 24 | Sta. María Chichihualtepec | — | building stone, pottery | TL?, I–II | INAH files, 1975 (#10) | EJ-EJ-SMC-7 |
| 25 | east of Los Ocotes | Los Ocotillos | ? | ? | INAH files, 1978 (#12) | EJ-EJ-LO-4 |
| 26 | southeast of San Juan Logolava | Loma del Cuatle | pottery | IIIA | INAH files, 1975 (#1) | EJ-EJ-LOG-5 |
| 27 | San Juan Logolava, on Barranca del Higo | — | pottery | V? | INAH files, 1975 (#2) | EJ-EJ-LOG-1 |
| 28 | west of La Compañía | El Gallo | graves | ? | García & Palacios, 1976 (#161) | EJ-LC-LC-8 |
| 29 | San Matías Chilazoa | — | ? | ? | INAH files, 1975 (#11) | EJ-EJ-CHI-7 |

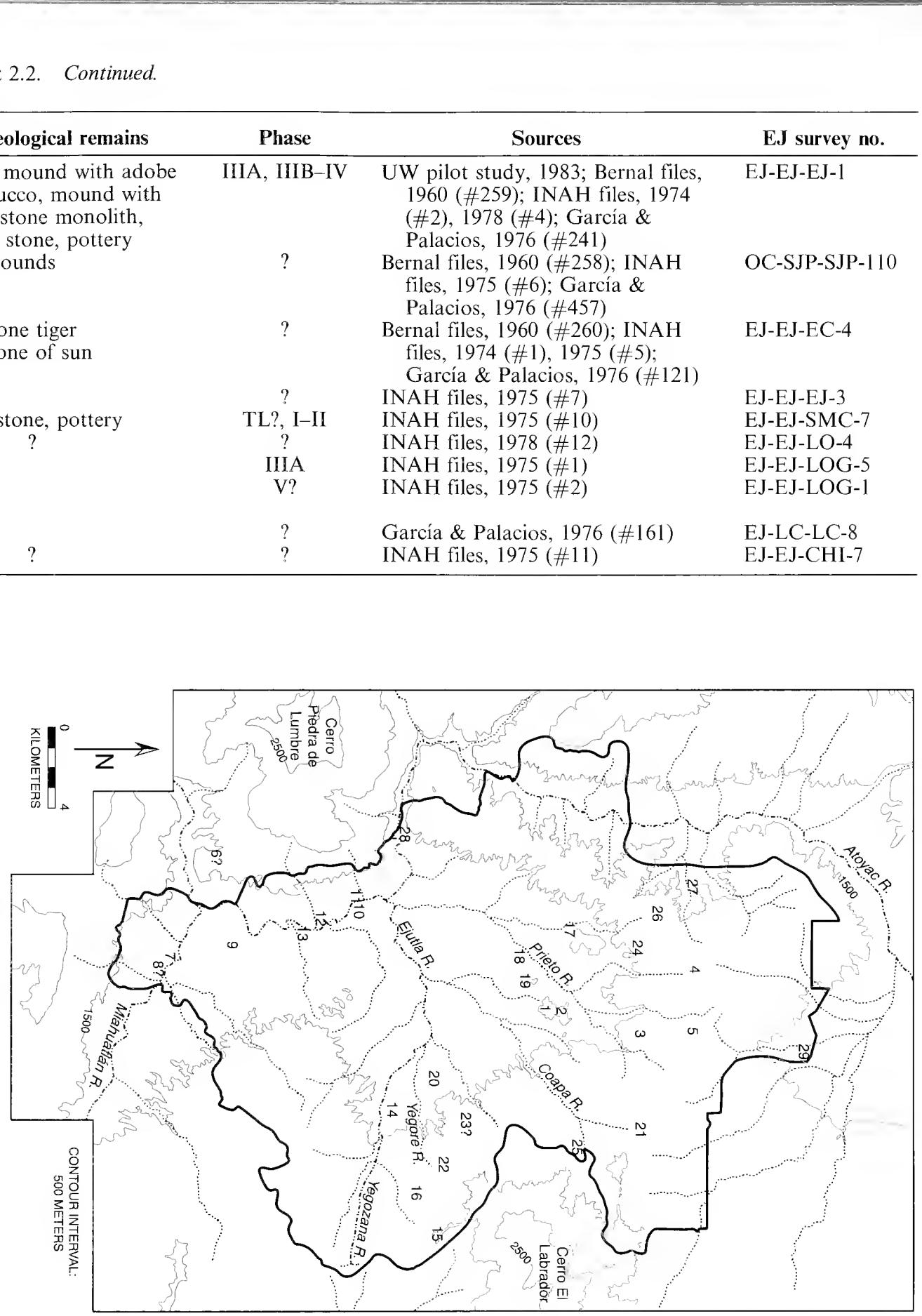



FIG. 2.26. Archaeological sites known in Ejutla prior to the regional survey; numbers mark approximate location (see Table 2.2 for information on each numbered location).

chapter with a comparative discussion of selected, relevant regional survey findings from across highland Mesoamerica. This macroregional comparative analysis serves as foundation and background while also providing an overview of research questions and historical issues that focus the temporal chapters to follow.

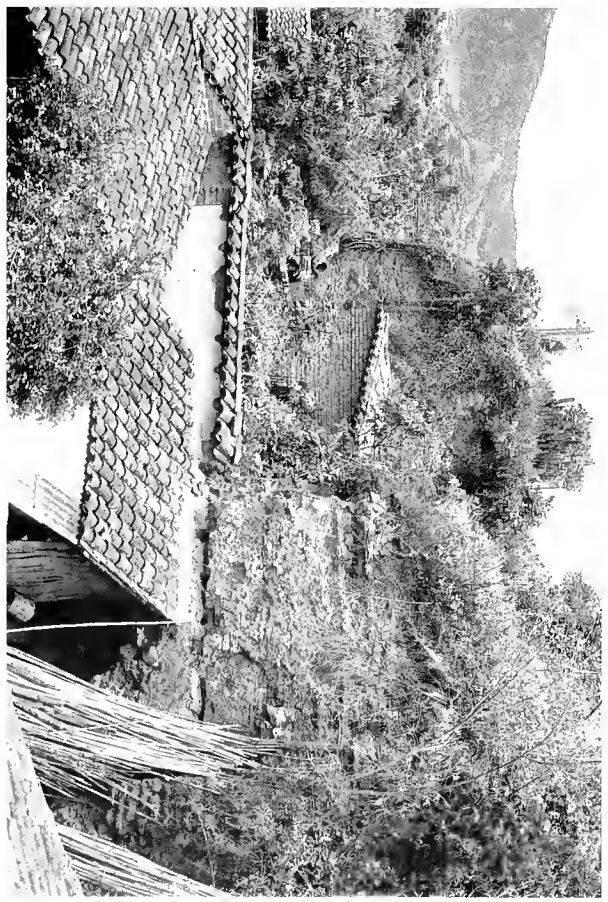


FIG. 2.27. Stucco floors and other architecture visible in a large pre-Hispanic mound in the center of Ejutla de Crespo.

# Chapter 3: Highland Mesoamerican Archaeological Surveys

> With the rapid destruction of archaeological sites in many areas of the world, survey done now may well be the only survey ever done before the sites disappear.
>
> (Kintigh, 1990, p. 248)

Gordon Willey (1953, pp. 1–2) began his regional settlement pattern study of the Virú Valley in Peru in April 1946 with the goal of studying the long-term human adaptation to a specific locale. His hope was that the settlement history of the Virú Valley eventually could be compared to other valleys studied in a similar manner, an aim that ultimately was at least in part realized (Wilson, 1988). Willey recognized the experimental nature of his Andean survey yet expressed confidence that the settlement pattern approach was critical to a functional understanding of past societies (Willey, 1953, pp. 1–2). Now, more than six decades later, regional archaeological surveys have been conducted in geographic areas across the globe (Kowalewski, 2008). And, for those who study long-term societal change, it is currently more broadly recognized than in Willey's time that only through a macroscale perspective (e.g., Blanton & Feinman, 1984; Hall et al., 2011) that builds on regional-scale research can social scientists, including archaeologists, effectively gauge and analyze research questions concerning boundaries, political expansion, and networks of long-distance exchange.

"The most prolific and widely used means of generating new data in the field of archaeology is now survey" (Renfrew, 2003, p. 313). Regional survey projects have provided the relevant information for addressing questions about a wide-ranging set of issues that were difficult if not impossible to answer with data gathered exclusively from excavations or sample surveys in which small units were dispersed in noncontiguous ways across a larger landscape (Blanton, 2005). Systematic settlement pattern surveys have served as a means to answer local-level questions regarding the considerations that account for the spatial location of individual communities as well as broader issues, such as the evaluation of a suite of factors that underpin the formation of states and empires (e.g., Sanders et al., 1979; Balkansky, 2006; Kowalewski, 2008) or the impacts that humans have had on their native environments (e.g., Fisher, 2005; Fisher & Feinman, 2005). The impact of the research findings from archaeological surveys has had such a significant effect on how we view and understand the past in so many regions that Jeremy Sabloff and Wendy Ashmore (2001, p. 14) consider settlement pattern studies to be "the single most critical theoretical or methodological innovation in archaeology since World War II" (see also Cherry, 2003).

## History of Highland Mesoamerican Survey

The first systematic regional surveys in Mesoamerica were implemented in the Basin of Mexico, the outgrowth of a conference of central Mexican specialists that was held in Chicago in 1960 (Wolf, 1976). The principal goal of the session was to foster research that would increase our understanding of cultural evolution and change in the Basin of Mexico and its role in the cultural development of Mesoamerica. The meeting attendees recognized that broad, regional-scale information was necessary to address these issues and that Willey's methodology provided a suitable and cost-effective means (Sanders, 1999). After this conference, William Sanders began the Teotihuacan Valley Project in June 1960. The initial survey techniques were established and refined during this project, and subsequent surveys were conducted elsewhere in the Basin of Mexico over the next half decade (Sanders, 1965; Parsons, 1971; Blanton, 1972; Sanders et al., 1979; Parsons et al., 1982, 1983; Blanton et al., 2005; Nichols, 2006; Parsons, 2009). These studies, in conjunction with the more detailed regional mapping of urban Teotihuacan (Millon, 1973), set the standard for highland Mesoamerican regional surveys. Following more than a half century, dozens of systematic surveys have been completed across the Central and Southern Highlands of Mexico (Nichols, 1996, table 1; Smith, 2002, table 4-4; Balkansky, 2006; Fig. 3.1 illustrates the locations of highland surveys that provide the most comparable data to those reported here). In addition to the Basin of Mexico, settlement pattern surveys have been enacted in the Tehuacán Valley (MacNeish et al., 1972; Drennan, 1979; Drennan & Nowack, 1984), in the Cañada de Cuicatlán (Spencer, 1982; Redmond, 1983; Spencer & Redmond, 1997), in the Toluca Valley (Sugiura Yamamoto, 1991), in eastern Morelos (Hirth, 1980, 1987), and at Tula in Hidalgo (Mastache & Crespo Oviedo, 1974; Mastache et al., 2002). Overall, the largest contiguous area with systematic regional coverage is in highland Oaxaca, an area including the Central Valleys of Oaxaca and the adjacent Mixteca Alta, where a diverse block of approximately 8,000 $km^2$ has been surveyed (Kowalewski et al., 2009, p. 3). Since their inception, these full-coverage, regional surveys have been among "the most important sources of new archaeological knowledge about pre-Hispanic Mesoamerica" (Blanton, 2005, p. 295). The data derived from these regional archaeological surveys "have been central to forming and testing new hypotheses about the development of Mesoamerican civilization" (Kowalewski & Fish, 2009, p. ix)

## Surveys in Highland Oaxaca

Ignacio Bernal (1983) completed the first archaeological surveys of the Valley of Oaxaca in the 1950s. These early studies were reconnaissances. They relied heavily on local informants, who often knew of archaeological sites because of farming, down cutting, or looting. By inquiring at valley villages, Bernal was brought to locally known sites, which he later walked over and collected. Based on the surface ceramics, Bernal was able to assign pre-Hispanic settlements to specific time periods, although he did not endeavor to estimate the shifting sizes of these sites through time, nor did he implement a full-coverage or systematic walkover (sensu Fish & Kowalewski, 2009) of any part of the valley. Yet Bernal's investigations brought many of the larger sites in the Oaxaca and Ejutla Valleys to archaeological attention and demonstrated the widespread distribution of the Valley of Oaxaca ceramic complex that had been defined during excavations at Monte Albán (Caso et al., 1967). Bernal's forays convinced him of the richness of Oaxaca's pre-Hispanic past and the need for much further investigation. His initial

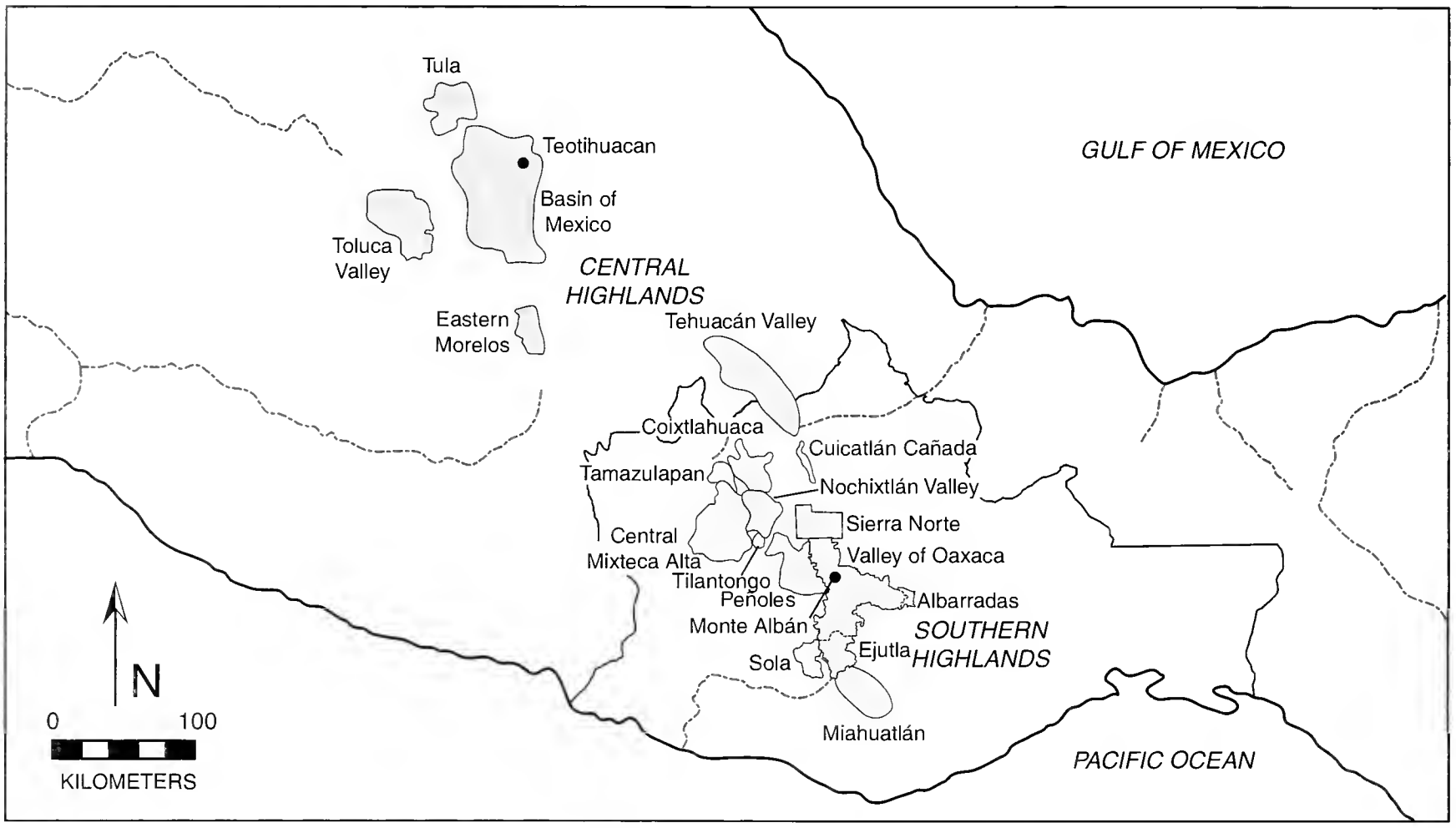



FIG. 3.1. Key systematic surveys in the Central and Southern Highlands of Mexico.

desire had been to record all places in the valley with archaeological remains; he later remarked that it would be more feasible to mark off those few areas that did not have pre-Hispanic vestiges of the past.

Richard Blanton (1978) initiated systematic archaeological survey in the Valley of Oaxaca in 1971, at the hilltop city of Monte Albán. Stephen Kowalewski (1976) followed with the pedestrian survey of the central part of the valley surrounding Monte Albán, and Dudley Varner (1974) surveyed the larger sites in the northern, Etla Valley. The rest of this Y-shaped valley was surveyed in 1977 and 1980 (Blanton et al., 1982; Finsten, 1983; Feinman et al., 1985; Kowalewski et al., 1989). We carried out the survey of the Ejutla Valley in 1984 and 1985 with the principal aim to examine shifting boundary relations at the southern end of the Valley of Oaxaca (Feinman, 1985; Feinman & Nicholas, 1988, 1990a, 1992a). A decade later, we extended the regional survey into the mountainous Albarradas area (around the large Guirún site) at and beyond the eastern edge of the Valley of Oaxaca (Feinman & Nicholas, 1996a, 1999). The addition of Ejutla and Albarradas expanded the contiguous full-coverage survey area in the Central Valleys of Oaxaca to over 2,700 $km^2$. With each expansion of the surveyed area, it became clearer that there was significant subregional variation in settlement patterns and demographic profiles across this large valley system.

The Miahuatlán Valley, at the southern end of the Central Valleys of Oaxaca, has seen limited systematic survey, largely in several transects that cross the Miahuatlán River (Markman, 1981). The mountains of the Sierra Norte at the northern end of the Valley of Oaxaca were surveyed by Robert Drennan (1989), and Andrew Balkansky (1997, 2002) surveyed the Sola Valley in the mid-1990s.

The other area in central Oaxaca that has been extensively surveyed is the Mixteca Alta. In the mid-1960s, Ronald Spores (1969, 1972) implemented the first settlement pattern studies in the Nochixtlán Valley. Bruce Byland (1980) followed with the survey of the Tamazulapan Valley. Subsequent regional investigations in the mountainous Peñoles area northwest of the Valley of Oaxaca (Kowalewski, 1991; Finsten, 1996) and other smaller valleys in the central Mixteca Alta (Plunket, 1983; Byland & Pohl, 1990; Balkansky 1998b; Balkansky et al., 2000; Stiver, 2001; Kowalewski et al., 2009) have greatly increased our coverage and perspective on settlement change during the roughly 3,000-year period from the advent of sedentary villages to the Spanish Conquest.

## Project Methodology

The principal goal of full-coverage regional survey is to obtain patterns of settlement for broad areas or regions that can be compared over time and space. The changing distribution of sites of varying sizes over a broad landscape provides archaeologists with important sources of information on shifts in political-economic organization as well as a perspective on changing human relations with the environment. One important component is the definition of centers, their number, size, and distribution, as towns and urban communities have ramifications for the larger settlement systems or hinterlands that surround them (Parsons, 1990, p. 13). When did large communities or centers arise in a region? How big were they? Were they nodes within interconnected networks or hierarchies of settlements? How many tiers or levels were present in those hierarchies or lattices? How much larger was the biggest settlement compared to those below? When did specific centers decline, and what occurred subsequently? Where were these large communities positioned relative to key resources and other settlements? The answers to these questions help historical social scientists begin to understand the broad-brush patterns of settlement and demographic change in specific regions while opening up a wealth of new paths for investigation. Another

important component of settlement patterns concerns how smaller settlements were dispersed across a landscape. Was settlement continuous across a region, or were there settlement clusters with shatter zones and uninhabited areas between then? The presence or absence of significant gaps between areas of more concentrated settlement inform us about political frontiers and boundaries (Kowalewski, 1990a, p. 55; Parsons, 1990, p. 15). Without regional-scale data, these spatial relationships and how they may have shifted across time are unknowable.

### Comparability with Oaxaca Survey Data

We began the survey of the Ejutla Valley with the primary objective to document the settlement history of a smaller valley on the southern edge of the Valley of Oaxaca that we could compare over time to the larger valley. There is no stark physiographic feature that separates Ejutla from Oaxaca, in marked contrast to the steep mountains that define the limits of the Valley of Oaxaca in all other directions. Did the pre-Hispanic polities centered at Monte Albán extend south into the Ejutla Valley? If so, when, how far, in what ways, and for how long? From historical and contemporary information on Ejutla, it was clear that the economic and political relationship between these two valleys was not stable over time. Ejutla was rarely, if ever, entirely autonomous of or unaffected by the populous valley to the north with its centers of power, but the level of integration varied over time. Comparability of data was paramount if we were to address our aim of understanding the relationship between these two areas in the pre-Hispanic past.

When Blanton began systematic survey in the Valley of Oaxaca, he brought with him the methodology he had learned and practiced during previous investigations in the Basin of Mexico (Blanton, 1972). Some modifications were necessary to adapt field and analytical procedures to different conditions in Oaxaca, but the overall methodology was similar. As investigators began survey projeets in other highland areas, the methodology of the Basin of Mexico projects was adapted for a variety of different environments and local conditions. Although each area has its own local trajectory and the reporting of data varies across a wide range of regional studies, a suite of key surveys have produced sets of data that are broadly comparable.

One impediment to comparison is the differing length of temporal phases or time spans that can be identified using surface-collected ceramics in each region (e.g., Feinman & Nicholas, 2011a). Yet with thoughtful adjustments, these large regional data sets still may be broadly and eonstructively compared. Smith's (2002) study of surveyed regions in highland Mesoamerica demonstrated the robustness of regional settlement pattern data for addressing questions at the macroregional scale. At the end of this chapter, we return briefly to Smith's principal findings as a prelude to the temporal (phase-by-phase) chapters that then follow.

### Chronology

The principal information for dating sites on regional survey comes from ceramics. For Oaxaca, the 3,000-year sequence from the time of the first villages to the arrival of the Spanish was divided into 11 ceramic periods (Table 1.1), based primarily on stratigraphic sequences exposed by Caso and Flannery and their respective colleagues (Caso et al., 1967; Flannery & Marcus, 1994). Some modifications were necessary, however, because of the fragmentary nature of the pottery that could be found and collected on the surface (Blanton, 1978; Kowalewski et al., 1978; Feinman, 1980, 1982; Blanton et al., 1982, app. VII; Kowalewski et al., 1989, app. VI).

In the Valley of Oaxaca ceramic sequence worked out by Caso at Monte Albán, one of the most problematic transitions was between Monte Albán IIIB and Monte Albán IV. Caso made the decision to distinguish these two phases based on what he considered an event (the abandonment of buildings around Monte Albán's Main Plaza) instead of a marked change in the associated ceramic assemblages (Caso, 1935; Caso et al., 1967). In subsequent investigations, various researchers (Paddock et al., 1968; Bernal & Gamio, 1974; Paddock, 1983a) endeavored to define this segment of the ceramic sequence more clearly. These collective findings were used on the survey to distinguish these two periods but not always with great facility. In general, Monte Albán IIIB ceramics were more often recorded in the central and northern parts of the valley, whereas Monte Albán IV ceramics were more visible in the southern and eastern arms of the valley (Kowalewski et al., 1989). At the southern edge of the valley, abutting Ejutla, neither phase was well represented. Given the low frequency and the difficulty of distinguishing the two phases, we opted to combine them in the Ejutla Valley survey as IIIB–IV (we discuss this chronological issue in Chapters 8 and 9; research advances in the intervening years provide a means of reconciling and addressing these data). There was very little pre–Monte Albán pottery in Ejutla, most of which was not diagnostic of a single phase. We could define Rosario phase occupations but lumped all earlier ceramics as Early Formative. So for the Ejutla region, we have only eight ceramic periods instead of the 11 discussed in the Valley of Oaxaca survey reports (Blanton et al., 1982; Kowalewski et al., 1989).

Most of the ceramic materials we observed on the surface in Ejutla clearly belong to the Valley of Oaxaca ceramic complex, although in some cases we did note some local variants. Pottery samples from excavation and survey in the Miahuatlán Valley (Brockington, 1973; Markman, 1981), immediately to the south, provided additional sources for interpreting the pottery we collected in Ejutla.

### Field Survey

The Ejutla Valley, like the Valley of Oaxaca, is an ideal landscape for surface survey. Few parts of this region are covered with dense vegetation, so surface artifacts are rarely obscured from an archaeologist's view. Most of the land, even higher ridgetops and gently graded slopes in the oak zone, has been cleared at some point during the recent past so that archaeological debris is visible on the surface. In alluvial and piedmont zones, nonmechanized farming practices have been employed for millennia, which brings ancient artifacts to the surface. Because tractors and other heavy farm equipment were still rare in Ejutla in the mid-1980s, relatively few sites had been completely leveled or destroyed. Furthermore, there are no large urban centers in the region, so modern urbanization is not the problem for survey in Ejutla that it is elsewhere in Mexico's Central Highlands. The largest contemporary settlement in the Ejutla Valley (Ejutla de Crespo) is built directly above the largest ancient settlement

FIG. 3.2. Gary Feinman walking across terraced slope near Monte del Toro.

in the study region, but the modern use did not completely obscure the ancient remains. By carefully studying portions of the ancient site that extend into fields beyond the modern town and by implementing a survey of houselots in the contemporary community, we were able to piece together a preliminary picture of this important site, finding archaeological materials in the modern town and on several sides of it.

To implement a controlled broad-scale comparison of the Valley of Oaxaca and the Ejutla Valley, we employed systematic, field-by-field pedestrian survey procedures that were comparable to methods used during the Oaxaca surveys (Blanton et al., 1982, pp. 1–12; Feinman et al., 1985, pp. 334–337; Kowalewski et al., 1989, pp. 24–30). We completed the Ejutla survey and data analysis in the pre-GPS and pre-GIS mid-1980s, so our project methodology may appear "low tech" to those who have become accustomed to carrying laptop computers into the field every day. We did not have that luxury, although we had other pleasures of being insulated from distractions and so were able to focus fully on the task at hand.

The field procedures we used not only have the advantage of comparability (with areas surveyed previously by archaeologists) but also yield information on a large corpus of sites across a broad region, at a reasonably low cost in money and time; no expensive equipment is needed beyond vehicles to move the crews to each area of the valley. Given the ever-present limits in research funding, these field procedures provide, at least for the highlands of Mesoamerica, the most systematic and economical means available for producing an inventory of the sizes and distributions of archaeological sites at a spatial scale sufficient to examine long-term change. Furthermore, with the data collected, we can examine not only changes in the numbers, sizes, and distributions of ancient occupations in relation to environmental conditions but also shifts in the spatial patterning of settlements. Evaluation of the latter is necessary for reconstructing boundary/frontier relations as well as for documenting changes in the organization of social, political, and economic networks over broad temporal and spatial scales.

Implemented during the summers of 1984 and 1985, the Ejutla regional survey was carried out by two crews of three to four people each. The crews checked for archaeological remains on the ground surface of the entire survey area, including every field, hilltop, ridge, riverbank, and unpaved street (Fig. 3.2). Over the two summers, we covered 522 $km^2$,

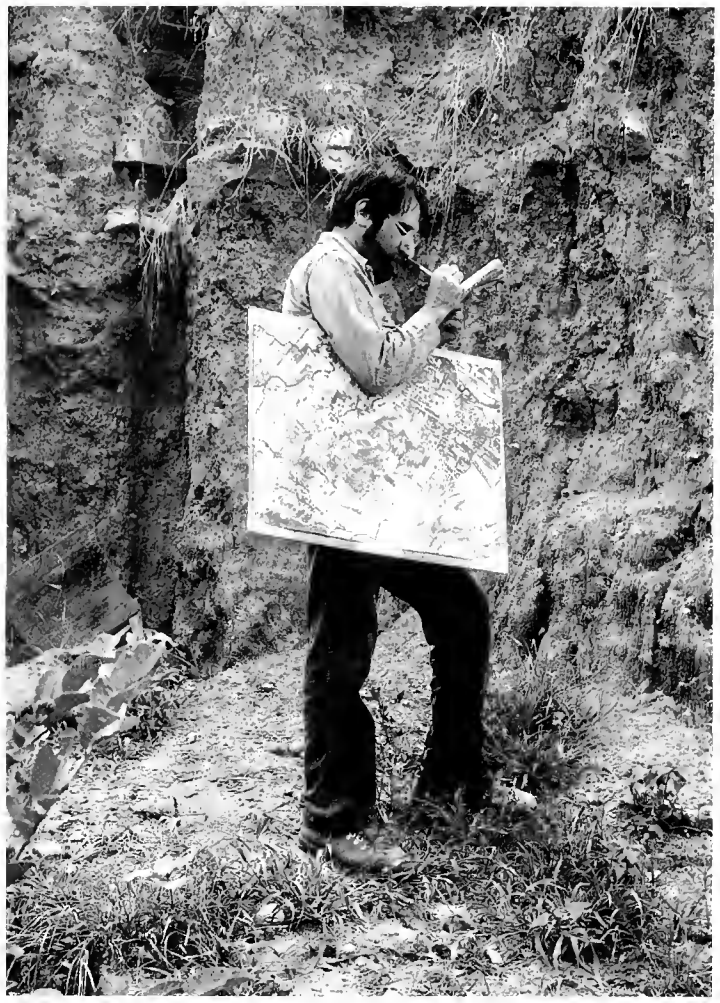


FIG. 3.3. Gary Feinman holding aerial photograph while he takes notes in front of Structure 1 at the Ejutla site.

completing a contiguous survey area that joined the Valley of Oaxaca with the northern limit of Charles Markman's (1981) survey transect through the Miahuatlán Valley.

For the survey, we used 1:20,000 aerial photograph mosaics that were enlarged to a scale of 1:5,000 (Fig. 3.3). At that scale (1 cm = 50 m), ancient mounds, platforms, plazas, walls, terraces, and other surface features can be mapped directly on the photographs. Collection areas, site and component boundaries, and other relevant but nonarchaeological information also are recorded on the photographs.

Using the aerial photographs as a guide, each crew systematically traversed the area on a specific photograph, covering it in back-and-forth, adjacent transects until the entire area in the photograph had been walked over. To ensure that no area was missed, we wrote "nada" across surveyed areas where we had not found any sites. The crew then moved to an adjacent photograph. Crews generally walked 25–75 m apart, depending on topography, vegetation, crops, and the presence of archaeological remains. Each crew member not only checked the surface for artifacts but also perused the area around and in front of them, looking for architectural remains of ancient buildings and platforms, suspicious rises in otherwise flat terrain, cultural materials in exposed profiles, scattered building stone, soil discolorations, or anything else unusual that might indicate an archaeological site. In so doing, the typical path of the surveyor is more like a slight zigzag rather than a rigidly straight line. In upper piedmont and mountainous areas, we walked ridgetops and other flat areas and checked the bases of ridges where the terrain began to flatten out (Fig. 3.4). We covered steeper slopes only as they provided access to higher, flatter ridgetops we wanted to check or when pre-Hispanic remains had already been observed nearby (at the foot or top of the ridge).

FIG. 3.4. Crew members surveying high piedmont ridge east of Los Ocotes.

Whenever pre-Hispanic artifacts were encountered, crews noted their nature, frequency, and location. Although remnants of pre-Hispanie mounds are the most visible remains of ancient settlements (Figs. 3.5 and 3.6), most sites are marked only by surface sherds and scattered building stones. The smallest, usually single-component Monte Albán V sites were recorded by the individual who found it, passing the information on its size to the crew member carrying the photograph. At all other sites, the crew came together to divide up the tasks of recording the relevant information. At each site, pottery was examined to date the surface remains to one or more of the eight pre-Hispanic phases that could be distinguished in Ejutla and to delimit the extent of the remains pertaining to each phase. The density of ceramics on the surface was recorded. In the face of criticisms that had been made about the grab-bag nature of ceramic collections in the Valley of Oaxaca surveys (e.g., O'Brien et al., 1989), we made an initial effort to collect all diagnostic pottery and rim sherds from units of uniform size at all sites (except the smallest with sparse scatters of sherds). We quickly abandoned that strategy as far too costly in time for the amount of "additional" information that was gained. We left such intensive collection methods to be carried out during future research efforts (should they occur) at the recorded sites. There was no uniform collection size that would work for all recovered sites, and our time was much better spent searching the entire surface of the site and opportunistically recording unusual artifacts or material densities in any part of the site (even places where no collection was made). In the uniform collection areas that we tried to implement at the start of the survey, we consistently found that some sample units contained too few sherds to be useful; at the same time, when we collected completely in other places, we ended up with multiple artifact bags that were too heavy to lug around easily during long days in the fields. The latter collections often contained many similar sherds (often body sherds), providing little new chronological or other information central to our project aims. Meanwhile, the broad-brush artifact density differences exhibited by these intensive collection units could be easily observed with the naked eye and recorded for all sites. At the same time, when considered over entire sites, artifact densities in the Ejutla Valley did not reveal the degrees of variation noted during the Basin of Mexico surveys (see also Kowalewski et al., 1989, p. 25).

We did not make ceramic collections at all sites, especially at smaller, single-component sites where wc were sure of the dating. At all larger, multicomponent sites we made many collections and recorded the locations of these pickups on the aerial photographs. When making ceramic collections, we lookcd for temporally diagnostic sherds, mostly vessel rims. These collections were then analyzed to check and confirm our field observations regarding the dating of the site (or part of a site). In addition to these diagnostic ceramics, we recorded the presence of many other artifact classes, including ceramic kilnwasters (Feinman, 1982, p. 389), obsidian, ground stone implements, and spindle whorls. These materials were noted

FIG. 3.5. Crew member on mound in northern mound group at San Joaquín.

FIG. 3.6. Crew members taking notes on low mound at EJ-SML-SML-22.

on the aerial photograph if they were not collected and were added to the relevant field notes.

All visible architectural features (such as mounds, platforms, plazas, house foundations, terraces, and walls) were mapped on the photograph. In pre-Hispanic Mesoamerica, as elsewhere (Hayes, 2012, p. 144), power was underpinned by wealth, social networks, and platform. Each of these bases was important and interconnected, fundamentally linked to interpersonal relations and the ability to reap benefits from the labor of others. Human labor was a key to political power in ancient Mesoamerica given the absence of domesticated draft animals and, for the most part, metal technologies. All leadership, after all, is relational by definition (Ahlquist and Levi, 2010).

For that reason, platform (control of a place or means to disseminate information) in ancient Mesoamerica was a critical basis for power; those architectural features and ceremonial contexts where leaders communicated and interacted with followers were a basis for attracting and coordinating people power or labor. Likewise, contexts that served to build and solidify alliances with other people of power were also a means to achieve greater wealth and more social connections. Archaeologically, we do not have record of many of the locations or means that aspirant leaders could have employed to attract and retain followers. Yet the remnants of architectural features and structures—civic-ceremonial plazas and buildings—afford us some opportunity to investigate both the nature and the scale of political platforms. These facilities also yield data on some of the different ways in which leader–follower interactions occurred or may have been communicated.

The remains of public architecture, including mounds, ballcourts, platforms, and plazas, also provide an empirical record regarding the actions and cooperation of human groups (Rapoport, 1982; Blanton, 1989; Trigger, 1990; Hutson, 2002). For example, the size and elaboration of constructions are unequivocally related to amounts of labor invested in construction (e.g., Blanton, 1989; Abrams, 1994). The nature of the civic-ceremonial architecture also yields clues regarding the nature and scale of associated activities. For all these reasons, we recorded and report the visible remains of architectural features in some detail, including their measurements, significant artifacts, visible plaster floors, evidence of looting, and so on. We interpret these data as providing some of the most direct indications of the scale and nature of political activities and power that we have for particular contexts. At every site, we also noted modern patterns of land use, crops, erosional and depositional conditions, and a set of environmental variables (e.g., topography, distance to water, and soil color and texture).

Whenever we found pre-Hispanic remains on the surface, we assigned each site a field number that indicates its location relative to modern administrative units (Appendix I). Each field number consists of three sets of letters (e.g., EJ-LC-LL-1). The first set refers to the district. Most sites in our survey area belong to the modern Ejutla district (EJ), but some at the northern end are part of the Ocotlán district (OC). The second set of letters pertains to the *municipio* (town) on whose land the site is located. The third set refers to smallest administrative unit (the *agencia*). For areas administered directly by a *municipio*, the letters for that town are repeated (e.g., EJ-TAN-TAN-1). Sites in each jurisdiction are numbered consecutively, beginning with 1, in the order they are found. In line with the Valley of Oaxaca Settlement Pattern Project, we followed the 100-m rule in the field and assigned a new field site number if we went more than 100 m without finding any traces of pre-Hispanic settlement (Kowalewski et al., 1989, pp. 29–30). At times, as the survey continued, two sites that were originally assigned different field numbers were found to be part of one larger site. In all, we recorded 423 pre-Hispanic sites (plus five nonceramic sites that could not be dated) and made 141 ceramic collections during the survey of the Ejutla Valley. In reality, we performed few studies or computations using these field-numbered localities as our main analytical units, although they do conform with the recording and preservation goals established by Mexico's Instituto Nacional de Antropología e Historia, and we are pleased to assist (and adhere to the aims of) these efforts.

**Laboratory Analysis**

In our field laboratory in Ejutla, we washed and tabulated the ceramic collections and made final assessments of ceramic periods represented by the potsherds in each collection. These evaluations were checked against the information recorded on the air photographs. We also systematically organized the site survey data on forms by field site number, with reference to the information recorded in our field notebooks and directly on the aerial photographs. On velum, we traced all information that was recorded on the photos, such as structures, terraces, collection areas, and other relevant features (both archaeological and modern). We did this for two reasons: to have a backup of all the information we recorded on each aerial photograph and to have a medium on which we could trace the extent of each site during each phase of occupation. We used a different colored pencil for each phase so that we could more easily see and compare the ceramic distributions for each phase. In the process of making these tracings, all site and architectural drawings, site boundaries (by phase), and other information on each air photograph were checked. We used the same 100-m rule to identify separate components of any one phase at the large multicomponent sites.

After our return to the University of Wisconsin in Madison, we prepared a topographic base map and transferred all recorded sites to this map. At this point, we had to make some corrections for distortions in the aerial photographs. From the base map, we created the phase-by-phase settlement maps by tracing the components for each phase on separate maps. Each temporal component was then assigned a unique number. We

followed the same tripartite system as the Valley of Oaxaca surveys (district-phase-site number); the modern administrative districts in the valley were numbered 1–5, so Ejutla became number 6. Although we identified only eight phases in Ejutla, to avoid confusion we used the same numbering system of 1 for the earliest phase (Tierras Largas) to 11 for the latest (Monte Albán V) for coding the data. (In the text and on some maps, we often use the phase abbreviation instead—R for Rosario, EI for Monte Albán Early I, and so on; for the earliest sites in Ejutla that cannot be dated more securely than to the Early Formative, we use EF.) The third part of this numerical designation is the site's number within the particular phase and survey area. Appendix I provides the correspondence between original field site numbers and numerical phase designations. Large, multicomponent field-numbered sites could have many different components across space and time. After all site components (the occupation of a single location during a particular phase) were assigned their unique identifier, we used a compensating polar planimeter to measure the size (in hectares) of every component.

We then estimated the population of every site component using the basic procedures developed by Sanders (1965) and Jeffrey Parsons (1971) for the settlement survey of the Basin of Mexico that had been adapted for the Valley of Oaxaca surveys (Blanton et al., 1982, pp. 10–11; Feinman et al., 1985, p. 336). As in those studies, we proceeded on the assumption that a general relationship exists between the areal extent of a settlement and the population of that locality (e.g., Ogrosky, 1975).

In general, ceramic densities in the Ejutla Valley were similar to those in Oaxaca. The most common density was "very light," which corresponds to 10–25 people per hectare (Sanders, 1965), although a number of sites had only a trace (5–10 people per hectare). Consequently, for Ejutla, as in the Valley of Oaxaca, most settlements were calculated as having 10–25 people per hectare of occupied area. At sites with terraces and house foundations, we were able to make more precise estimates. Observations of building stones, house foundations, slight rises on terraces, and terrace dimensions were used to estimate the number of houses on each terrace. Most terraces in the Ejutla region were small and appear to have had only one house, with 5–10 people. Other nonterrace house foundations that we recorded were small; we assume that they also housed 5–10 people. Although the settlement population estimates are calculated as ranges, for ease of presentation and comparison, we generally refer to mean values. These and a range of other field data are presented for each site component in Appendix II. Tabular summaries for each phase are presented in Appendix III. The ceramics for each collected site component are presented in Appendix IV.

The 100-m rule is an arbitrary construct to aid consistency in recording and reporting field finds, and we do not expect that every component we identified was a separate community (Blanton et al., 1982, p. 40). Various visibility factors do affect what we see on the ground today, especially under and near modern villages or when earlier components are found within the bounds of much larger, later sites. For analytical purposes, we bend the 100-m rule and combine nearby components into larger (and more meaningful, we believe) communities, especially when multiple large settlements are situated within approximately 200 m of each other. Our discussions are based on the combined sites. We use the phase number of the largest component when referring to the combined sites in Ejutla. All components that have been combined are listed in Appendix I. The location of all field-numbered sites and phase-specific components are shown in Appendix V.

Other analytical procedures include the calculation of volumes for all measured mounds and platforms; these measurements and other information recorded on mounds and terraces are presented in Appendices VI and VII. Appendix VIII includes descriptions of all sites in the Ejutla Valley survey area that have at least one pre-Hispanic mound, terrace, or other significant feature. This list also contains information on all sites in the survey region that had been reported previously. A drawing is included for all sites with more than one mound or terrace (Appendix IX).

The original grid system of 4 × 4-km squares that was used in the Valley of Oaxaca surveys to organize data in comparable blocks (Blanton et al., 1982, pp. 11–12) was extended to Ejutla, which divided the survey area into 48 full and partially surveyed grid squares (Appendix V). The original 0N0E point of the grid was positioned outside the southwestern corner of the Valley of Oaxaca survey area so that all numbers would have north and east coordinates. The Ejutla survey region extended farther south, so to fit Ejutla into this grid system, the southernmost squares have south coordinates. We use these squares for comparing densities of populations and specific artifacts across the region at scales between the site and the subregion. We also organize the land use information with this grid system.

Once the basic settlement and ceramic data were organized and entered into Excel spreadsheets, we completed a series of additional calculations to facilitate our analyses. Using natural breaks in histograms of mound volumes and population sizes, we created mound and population hierarchies for each phase. These hierarchies are a useful way of examining hierarchical development and organizational change through time (Blanton et al., 1982; Kowalewski et al., 1989). Population and mound hierarchies are both used to define possible centers, although the presence of mounds is considered more indicative of political power than population size alone.

The mound and population hierarchies are used in conjunction with nearest-neighbor distances between both centers and smaller sites and, at times, the presence of shatter zones to identify clusters of settlements that appear to have interacted more closely with each other than they did with more distant communities (Blanton et al., 1982, pp. 51–54; Kowalewski et al., 1989, p. 75; Feinman, 1998, p. 116). At times, sites in northern Ejutla were part of settlement clusters that stretched into southern Valle Grande.

Another comparative measure we use is the number of ceramic types per site. For each site component, we calculated how many different ceramic types diagnostic of the respective phase were present in the collections made at that site (Feinman, 1982). We use this figure as an overall measure of access to goods. For each phase, we compare the number of types per site for small sites versus sites with mounds (which also tend to be larger) to examine the relationship between political power and access and how those relations changed over time (Feinman, 1980; Kowalewski et al., 1989, pp. 94–96). We expect that (all things being equal) larger settlements would have greater ceramic diversity because of expanded access to exchange networks as well as the broader range of activities that occur at more populous communities. In general, larger settlements have greater functional size (Berry

& Garrison, 1958; Christaller, 1966). Settlements with significant concentrations of public architecture also would be expected to exhibit greater ceramic diversity because of their size and because they often were centers of political power; those who wielded that power generally had expanded access to portable goods. Field collection procedures would tend to amplify these tendencies (Kowalewski et al., 1989, p. 139). Nevertheless, the most significant aspect of this measure is not that large settlements or sites with public architecture tend to have greater ceramic variety than smaller communities but rather that the patterning of this measure varies considerably over time and space.

We recorded information on a range of other materials (i.e., obsidian) that, except at single-component sites, cannot be attributed to any single phase. Few of these artifacts are found at single-component sites prior to the Early Classic (Monte Albán IIIA). Settlement expanded greatly in the Ejutla Valley in Monte Albán IIIA, affording us a much larger sample that can be attributed to a single phase. For these reasons, we do not bring up discussions of obsidian, shell, and nonagricultural production until Chapter 7. We also introduce terrace sites in that chapter for similar reasons; in Ejutla, we recorded ceramics earlier than IIIA on only a few terraces at one site.

## Land Use Analysis

### Methodology

Pre-Hispanic land use has been an important component of settlement pattern studies in the Valley of Oaxaca since their inception (Kowalewski, 1980, 1982; Nicholas et al., 1986; Feinman & Nicholas, 1987, 1990b, 1992b; Nicholas, 1989). We have used the systematic comparison of settlement location and the distribution of agricultural land classes of varying quality across the valley to evaluate the strength (or absence) of the relationship between settlement and environmental variables (i.e., agricultural potential). This stream of research, although perhaps less central to present archaeological debate than it was when the work was completed, has been structured to assess theoretical arguments advanced by Sanders and his colleagues (e.g., Sanders et al., 1979; Sanders & Nichols, 1988) that saw settlement location largely as a function of the distribution of agrarian resources. Our published findings (e.g., Nicholas, 1989) for the Valley of Oaxaca indicated that land and water alone could not account for the size and location of population and that a wider suite of factors were involved (see also Feinman & Nicholas, 1990b, 2005). In broader social science, the questions that these data inform relate back to core, unresolved debates that were the focus of such key theorists as Thomas Malthus (1989) and Ester Boserup (1966; see also Blanton, 1983a; Fisher & Feinman, 2005; Fisher et al., 2009).

Our land use analyses are underpinned and possible only because of earlier seminal studies by Flannery and Anne Kirkby. Flannery's Valley of Oaxaca Prehistory and Human Ecology project (Flannery et al., 1967; Flannery, 1970) illustrated the great temporal depth (as early as the first millennium BC) of many of the simple water manipulation strategies (pot irrigation and small-scale canal construction) that continued to be employed in Oaxaca into the 20th century. Kirkby's (1973) regional study of contemporary farming resources and practices in Oaxaca was completed as part of Flannery's project. Although a range of contemporary crops are grown in the valley, Kirkby focused on the most important plant—corn—and provided 20th-century baseline yields and spatial variability.

Kirkby (1973, p. 26) recognized that water is the critical resource for determining agricultural yield in the Valley of Oaxaca. Focusing on moisture availability, she mapped the distribution of different agricultural conditions across the region. Kowalewski (1980, 1982, p. 151) simplified Kirkby's land classification scheme by grouping classes with similar yield profiles. Class I land consists of "canal-irrigable" and "water-table" land and produces the highest yields. Class II combines "marginal water-table" and "good floodwater-farming" land, where harvests may be as high as on Class I land but generally are more variable. Class III consists of "poor-floodwater" and "dry-farming" land, which in dry years may produce little or nothing. Areas of Class III land in very steeply sloping terrain are considered to be only 10% arable. Following Kirkby (1973), we assumed that present conditions are a reasonable guide to project the distribution of land classes over the past 3,500 years. At present, there is no evidence to contradict this (Byers, 1967; Flannery & Schoenwetter, 1970; Schoenwetter, 1974). We also took into account the effect of modern technology, such as motorized pumps, that have increased the availability of water in some areas above what would have been possible with pre-Hispanic technology.

Kirkby also attempted to extrapolate yields back to the pre-Hispanic era. Examining archaeological maize (corn) cobs from Tehuacán and Oaxaca, she described increasing cob length through time (Kirkby, 1973, pp. 124–126). Yield increases with cob length; thus Kirkby concluded that maize yields per unit area of land increased at a fairly constant rate throughout the pre-Hispanic era. Based on these changing yields and Kirkby's range of modern yields for each land class (an average of 30% fallow was built into her land use assumptions), we extrapolated high and low yields (basically for wet and dry years, respectively) into the past for the different land classes (Kowalewski, 1980, p. 154; 1982, p. 156; Nicholas, 1989). These yields, in metric tons per hectare, are based entirely on maize. We lack the information on pre-Hispanic crop mixes that would allow a precise accounting of land cultivated in each crop, so we use maize yields as a proxy for total crop yields. We recognize, however, that using maize as a proxy may produce lower yields in the driest parts of the valley where other, xerophytic plants may have played a larger role (e.g., Feinman & Nicholas, 2005; Feinman et al., 2007).

The final variable affecting yields is annual rainfall. The critical amount of rainfall for a successful corn crop in Oaxaca is 700 m per annum (Kowalewski, 1982, pp. 155–156). We adjusted potential yields on Class II and III land (those without irrigation potential) in those parts of the valley where average rainfall is less than 700 mm per annum to reflect more marginal conditions for agriculture.

Average yearly rainfall varies significantly across the region, with more rain falling in the mountains than on the valley floor itself. In a typical year, more rain falls in the Etla arm and the Valle Grande, whereas eastern Tlacolula, the driest subregion of the Valley of Oaxaca, receives less than this critical amount of moisture. While excavating the pre-Hispanic site at Ejutla de Crespo during subsequent summers, we became even more

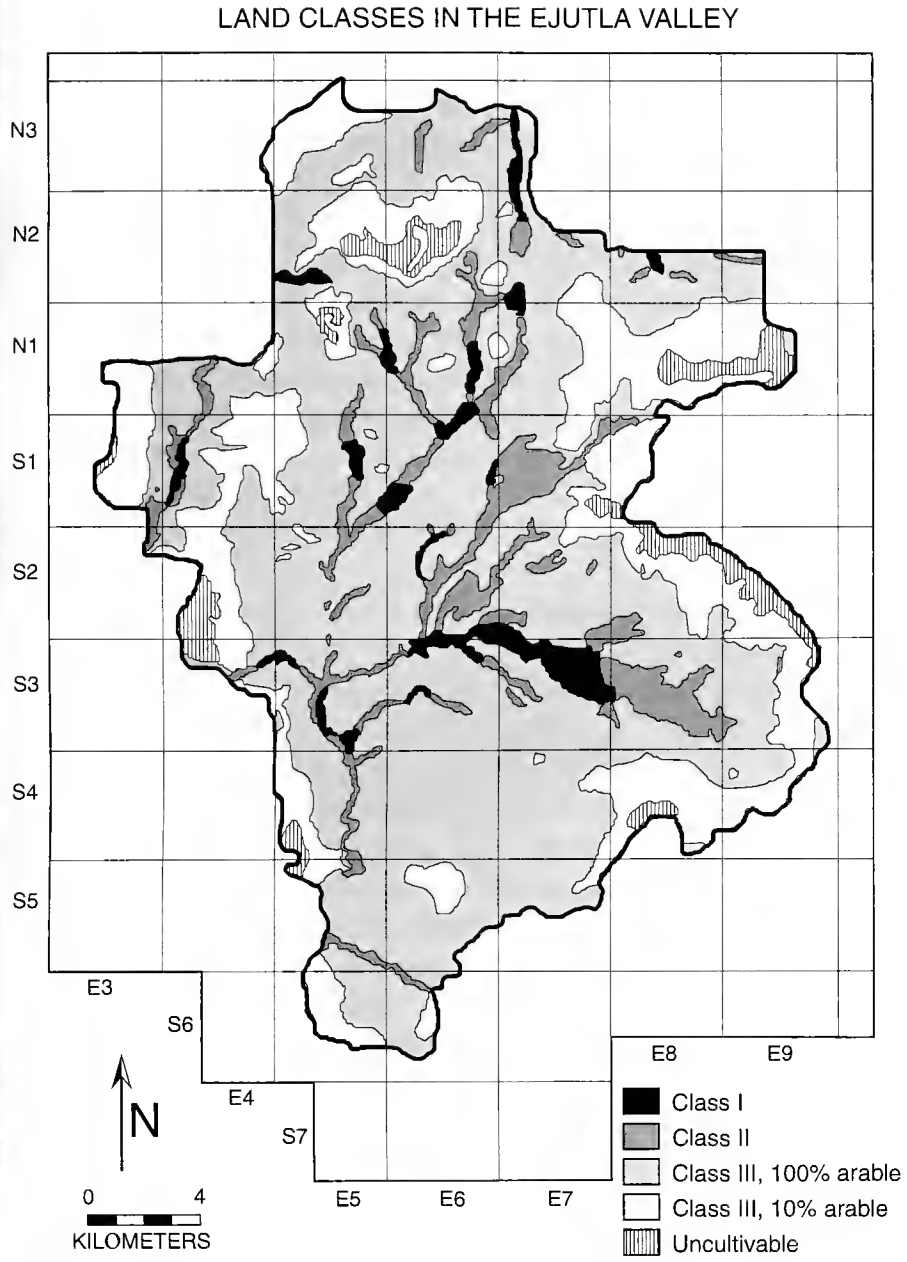



FIG. 3.7. Distribution of land classes in the Ejutla Valley survey region.

aware of local rainfall patterns. Storms moving into the Ejutla area from the south often move up the western side of the valley, dropping rain on the mountains and not in the valley. These storms head north toward Ayoquezco in southern Valle Grande and drop rain when they encounter the mountains in the Mixtepec area (Fig. 2.3). With the exception of the few tropical storms that bring rain to very wide swaths of this valley system, storms from the east bring more rain to Ejutla de Crespo than do those from the west. These storms from the east often move along the northeastern edge of the Ejutla Valley, at times dropping rain on the slopes of El Labrador but not in the valley itself. When these storms continue their prevailing northwestern direction, they produce rain in the Los Ocotes area and in other parts of northern Ejutla and southern Valle Grande. These rains feed small arroyos and creeks coming off the lower slopes of El Labrador (and also in Los Ocotes area). Many water conservation techniques are employed to capture this water—e.g., check dams, pump irrigation, and small irrigation channels—and we recorded many small patches of truck gardens, especially tomatoes.

Although Kirkby's study did not include Ejutla, the region is clearly within the same rainfall regime and modern agricultural land use pattern that she described for the Valley of Oaxaca. Based on her basic tenets, we extended the land use analyses that were employed in Oaxaca to the Ejutla Valley. For comparability between Ejutla and Oaxaca, we followed the same methodology that we had used in the Oaxaca analyses and

TABLE 3.1. Distribution of agricultural land classes (in hectares) in the Ejutla Valley survey region.

| Square | Area (ha) | Class I | Class II | Class III | Rainfall |
|---|---|---|---|---|---|
| N3E4 | 41 | 0 | 0 | 4 | high |
| N3E5 | 1,132 | 0 | 9 | 601 | high |
| N3E6 | 1,306 | 4 | 97 | 1,132 | high |
| N3E7 | 360 | 86 | 9 | 265 | high |
| N2E4 | 70 | 4 | 7 | 57 | high |
| N2E5 | 1,600 | 57 | 49 | 875 | high |
| N2E6 | 1,600 | 0 | 97 | 676 | high |
| N2E7 | 1,218 | 69 | 105 | 907 | high |
| N2E8 | 720 | 40 | 31 | 626 | high |
| N2E9 | 277 | 0 | 18 | 241 | high |
| N1E3 | 355 | 0 | 0 | 103 | high |
| N1E4 | 726 | 0 | 61 | 530 | high |
| N1E5 | 1,600 | 12 | 145 | 1,175 | low |
| N1E6 | 1,600 | 101 | 281 | 1,139 | low |
| N1E7 | 1,600 | 25 | 67 | 988 | low |
| N1E8 | 1,479 | 0 | 2 | 419 | high |
| N1E9 | 648 | 0 | 0 | 39 | high |
| S1E3 | 711 | 0 | 38 | 222 | high |
| S1E4 | 1,600 | 53 | 80 | 854 | low |
| S1E5 | 1,600 | 72 | 111 | 1,215 | low |
| S1E6 | 1,600 | 128 | 160 | 1,308 | low |
| S1E7 | 1,600 | 8 | 310 | 872 | low |
| S1E8 | 524 | 0 | 49 | 69 | low |
| S2E3 | 52 | 0 | 15 | 34 | low |
| S2E4 | 1,341 | 0 | 0 | 653 | low |
| S2E5 | 1,600 | 0 | 92 | 1,508 | low |
| S2E6 | 1,600 | 128 | 428 | 1,044 | low |
| S2E7 | 1,600 | 30 | 177 | 1,317 | low |
| S2E8 | 1,513 | 0 | 64 | 700 | low |
| S2E9 | 600 | 0 | 0 | 50 | low |
| S3E4 | 528 | 12 | 25 | 205 | low |
| S3E5 | 1,598 | 92 | 148 | 1,284 | low |
| S3E6 | 1,600 | 125 | 81 | 1,394 | low |
| S3E7 | 1,600 | 475 | 123 | 1,002 | low |
| S3E8 | 1,600 | 3 | 579 | 1,016 | low |
| S3E9 | 1,338 | 0 | 20 | 878 | low |
| S4E4 | 23 | 0 | 0 | 2 | low |
| S4E5 | 1,518 | 3 | 94 | 994 | low |
| S4E6 | 1,600 | 0 | 0 | 1,600 | low |
| S4E7 | 1,600 | 0 | 0 | 1,488 | low |
| S4E8 | 1,272 | 0 | 0 | 373 | low |
| S4E9 | 701 | 0 | 0 | 367 | low |
| S5E5 | 1,027 | 0 | 93 | 769 | low |
| S5E6 | 1,373 | 0 | 7 | 1,148 | low |
| S5E7 | 734 | 0 | 0 | 667 | low |
| S5E8 | 5 | 0 | 0 | 1 | low |
| S6E5 | 695 | 0 | 0 | 359 | low |
| S6E6 | 560 | 0 | 30 | 440 | low |

adhered to Kowalewski's tripartite classification of arable land (Fig. 3.7). We used information we had recorded on the aerial photographs and in our field notebooks to map the distribution of these three land classes across the Ejutla region. INEGI maps of rainfall were consulted to determine which parts of Ejutla received "high" or "low" rainfall.

As an analytical tool for comparing the distribution of agricultural land classes across the region, we calculated the amount of each land class (in hectares) within each 4 × 4-km grid square (completely surveyed grid squares are 1,600 ha) and designated each square as high or low rainfall (Table 3.1). We multiplied the amount of each land class in each grid square by the respective range of yields for either high or low rainfall to obtain estimates of annual metric tons of maize for each phase. These figures represent maximum yields based on full exploitation of all agricultural land under existing available technologies and rainfall regimes. As such, they

provide a basis for comparing agricultural potential across the region at several scales of analysis, from individual grid squares to subregions to entire valleys. They do not—nor are they intended to—represent any approximation of actual production in the past.

### Factoring in Labor

To provide estimates that approximate pre-Hispanic levels of production and potential surpluses, we factored in the available labor supply and the amount of land that a pre-Hispanic farmer could have cultivated. We use Kirkby's (1973, p. 73) figure of 2 ha per farmer per annum using the traditional Mesoamerican hoe, the *coa* (see also Tolstoy, 1988). Based on Kowalewski's (1980, p. 156) interpretation of Wayne Kappel's (1977) present and historic population profiles in four communities in the eastern arm of Oaxaca, we calculate that the pre-Hispanic labor force was approximately half the estimated archaeological population. The figure we employ is lower than Kirkby's (1973, p. 127) calculus that a family of five (using a *coa*) could cultivate 8 ha but considerably higher than the 2 ha per family that Sanders and Deborah Nichols assumed (Sanders and Nichols, 1988, p. 71; see also Nichols, 1989, p. 1023). Our estimate for a family of five is 5 ha.

We consider the available labor supply in two ways. First, we calculated what the maximum potential yield (in metric tons) for each phase would be if labor were distributed across the region in the most efficient arrangement relative to agricultural resources (i.e., sites always located near the best land). In this calculation, we did not consider actual settlement location but deployed farmers first on Class I and Class II lands: Class III land was considered only when better farmland was no longer available. These approximations gave us a baseline for examining the divergence of actual versus optimal site location relative to agricultural land resources.

A second set of calculations was designed to obtain reasonable estimates of agricultural production based on land resources near recorded pre-Hispanic settlement. Regardless of why people choose to settle where they do, we reason that they would have cultivated the best available land within a reasonable distance from their homes. As a proxy and in recognition of the friction of distance (Chisholm, 1968), we limited farmers to the grid square (a 1,600 ha area) in which they resided. To calculate this figure, we deployed farmers to the Class I and Class II land in each square before adding in the use of Class III land. In squares with high populations, land resources often were insufficient to allow for the presumption that each farmer would use 2 ha of land. In those cases (where most of the population was concentrated into one large site), we limited farmers to the grid square they resided in and assumed that the excess population did not farm. (We recognize that for some of the very largest sites, this assumption may be too stringent; agricultural production may have been somewhat higher at the largest sites than what we have calculated although still not sufficient to feed the entire population of those sites.)

For the initial Valley of Oaxaca land use studies, we assumed that Class I and Class II lands were preferred equally—that a farmer would not necessarily pass over Class II land (where yields could be almost as high) in search of better Class I land (Kowalewski, 1980, 1982). For comparability, we followed the same procedure for Ejutla. Given the dispersion of Class I land in narrow bands along small stream courses in many parts of the Ejutla Valley, however, calculating agricultural production in this manner often resulted in much Class I land not being used, even when sites were located nearby. So for both valleys, we made a second set of calculations where we gave Class I land priority over Class II land. Farmers were deployed to Class II land only after all nearby Class I land was already under cultivation. These calculations produce slightly higher yields, especially in Ejutla early in the sequence, when populations were very low. For general comparisons with Oaxaca, we use the estimated yields from these two sets of calculations as ranges that can be compared over time.

### Factoring in Consumption

The land use analyses require one additional piece of information to convert agricultural yields in metric tons to population levels that could have been supported: information on consumption. Kowalewski (1982, p. 158) reviewed consumption figures in a number of ethnographic studies of communities in the Valley of Oaxaca as well as other parts of Mesoamerica to arrive at a range of 0.16–0.29 metric tons per person per year. We apply that range to the different sets of yield figures to convert them into levels of potential population. Clearly, these potential population estimates are rough approximations. Yet they represent reasonable baselines to compare with the observed archaeological populations at various scales.

To avoid confusion when we discuss "potential" populations derived from the different sets of yield figures, we use specific language. We use *resource-based potential population* to refer to the number of people that the region (or other context, such as subregion or grid square) could have supported if all agricultural land was farmed, that is, with sufficient labor and a specific variety of maize, how many people could be sustained in the region in a year with average rainfall. The resource-based potential (based on maize agriculture) is broadly analogous to the ecological concept of primary productivity. *Maximal labor-based potential population* refers to population levels that could have been sustained had the available (archaeologically derived) labor supply been deployed to farm the best agricultural land in the region (i.e., sites optimally located relative to good agricultural land). *Labor-based potential population* (or simply *average potential population*) is calculated using the mapped distribution of the archaeological population (i.e., recorded site locations) and exploitation of land resources near their settlements. The latter estimates are the closest approximation to what pre-Hispanic levels of production may have been and the population levels that could have been supported by the available labor. Here we also refer to wet-year and dry-year potentials to assess risk and variance. Below we present a few general results of the land use analysis to presage patterns and themes that are taken up in the respective phase chapters that follow.

### Discussion

Overall, the distribution of agricultural land classes in the Ejutla Valley is broadly similar to the Valley of Oaxaca (Fig. 3.7; Nicholas, 1989, fig. 14.1). Rainfall and the distribution of good, well-watered agricultural land in the Valley of Oaxaca vary significantly by subregion (Nicholas, 1989, pp. 460–462), with Etla and the Valle Grande having the

TABLE 3.2. Distribution of good agricultural land (in hectares) in Ejutla and Valley of Oaxaca subregions.

| Subregion | Class I | Class II | High-rainfall Class II | Total Class I and high-rainfall Class II |
|---|---|---|---|---|
| Etla | 5,117 | 88 | 16 | 5,133 |
| Central | 1,261 | 2,652 | 678 | 1,939 |
| Northern Valle Grande | 3,345 | 2,600 | 882 | 4,227 |
| Southern Valle Grande | 2,003 | 1,180 | 1,180 | 3,183 |
| Western Tlacolula | 618 | 6,118 | 918 | 1,536 |
| Eastern Tlacolula | 396 | 1,584 | 10 | 406 |
| Ejutla | 1,527 | 3,702 | 523 | 2,050 |

greatest agricultural potential and eastern Tlacolula the lowest. Ejutla ranks in the middle of the Oaxaca subregions in the amount of land in the best two categories (Class I and high-rainfall Class II; Table 3.2). In many respects, Ejutla is environmentally most comparable to the Central subregion and western Tlacolula. Eastern Tlacolula is particularly deficient in good, well-watered farmland.

Most of the Ejutla drainage comprises Class III land (Fig. 3.7 and Table 3.1), which is comparable to the relative abundance of this land class in the Valley of Oaxaca (Nicholas, 1989, p. 460). In Ejutla, the largest patches of Class I and II land are situated along the Ejutla River in the center of the drainage basin, south of Ejutla de Crespo; smaller patches are distributed along the northern tributaries of the Ejutla River in north-central Ejutla. There also are small patches of good land along the Atoyac River and a few small tributaries in western Ejutla. There is a very small strip of Class II land along the Miahuatlán River, just below its confluence with the Atoyac River in southern Ejutla. Slightly more rain falls in northern than southern Ejutla so that farming on Class III land is more productive there. This is especially true for northeastern Ejutla, an area with few patches of Class I or II land but where there are broad areas of low piedmont that are quite productive with sufficient rainfall.

Archaeological populations in the Valleys of Oaxaca and Ejutla always remained far below their regional resource-based potentials (Table 3.3). In many respects, Ejutla is environmentally most similar to western Tlacolula, yet these two areas were always different in terms of the ratio between recorded population and the resource-based potential. In regard to this ratio, the patterns over time in Ejutla are most similar to those of southern Valle Grande, which it abuts. A brief diachronic review of population distribution relative to agricultural resources in the two valleys reveals how spatial proximity to centers of power may have had a greater affect on population distributions than did local agricultural resources alone.

Simple linear regression to compare actual population to the resource-based potential of each grid square for both Oaxaca and Ejutla reveals a lack of fit between the distribution of archaeological populations and environmental resources. As Kowalewski (1980, 1982) found in his earlier studies that considered only the Central area and the Valle Grande, land resources in Ejutla and the entire Valley of Oaxaca were poor predictors of settlement location. There were no significant positive relationships for either area (Table 3.4), although they were stronger for Ejutla than Oaxaca. In both areas, the fit was generally better during earlier phases (Monte Albán Early I–II) than later ones.

Although populations were very low in both valleys during the Early and Middle Formative, settlements tended to cluster near the largest center at that time, San José Mogote, in the Etla arm of the Valley of Oaxaca (Fig. 2.3; Nicholas, 1989). The same pattern was present in Monte Albán Early I and Late I with the establishment of Monte Albán in the center of the valley. The foundation of this new capital in Early I had no visible effect on settlement in faraway Ejutla. As Monte Albán expanded in Late I, Ejutla was affected to a degree similar to

TABLE 3.3. Estimated archaeological populations and regional resource-based potential populations, by phase, for Oaxaca and Ejutla.

| Phase | Estimated population* | Average regional potential | Dry-year regional potential |
|---|---|---|---|
| Valley of Oaxaca | | | |
| EF** | 1,942 | 147,600 | 66,900 |
| Ros | 1,835 | 183,100 | 74,000 |
| EI | 14,652 | 212,100 | 80,100 |
| LI | 51,339 | 260,500 | 88,100 |
| II | 41,927 | 296,100 | 94,300 |
| IIIA | 120,121 | 359,900 | 146,200 |
| IIIB | 78,930 | 437,300 | 160,300 |
| IV | 77,612 | 479,100 | 168,300 |
| V | 166,467 | 607,100 | 232,500 |
| Ejutla Valley | | | |
| EF | 24 | 30,100 | 7,600 |
| Ros | 40 | 36,700 | 8,500 |
| EI | 259 | 39,900 | 9,300 |
| LI | 3,455 | 51,100 | 10,200 |
| II | 2,184 | 55,600 | 11,000 |
| IIIA | 14,656 | 67,900 | 16,800 |
| IIIB–IV | 3,029 | 92,300 | 19,500 |
| V | 19,970 | 112,400 | 26,800 |

*All populations are means. Valley of Oaxaca populations are updated based on findings of the Albarradas survey (Feinman & Nicholas, 1996a), which included additional area within the physiographic bounds of the valley, and subsequent surface investigations in eastern Tlacolula (Feinman & Nicholas, 2004a).

** EF (Early Formative) for the Valley of Oaxaca is equivalent to the San José phase.

TABLE 3.4. Correlations between estimated archaeological populations and resource-based potential populations in each grid square in Ejutla and the Valley of Oaxaca.

| | Ejutla | | Oaxaca | | Oaxaca without Monte Albán | |
|---|---|---|---|---|---|---|
| Phase | $r^2$ | $r$ | $r^2$ | $r$ | $r^2$ | $r$ |
| EI | .127 | .356 | .008 | −.089 | .067 | .259 |
| LI | .171 | .414 | <.0001 | −.004 | .132 | .363 |
| II | .0004 | −.021 | .002 | −.048 | .046 | .215 |
| IIIA | .082 | .286 | <.0001 | −.006 | .004 | .061 |
| IV | .095 | .308 | .008 | −.091 | — | — |
| V | .059 | .244 | .001 | .036 | — | — |

TABLE 3.5. Maximal labor-based potential populations, by phase, for Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| Phase | Average | Dry year | Average | Dry year |
| EF* | 3,300 | 2,800 | 40 | 35 |
| Ros | 4,000 | 3,600 | 90 | 80 |
| EI | 38,200 | 33,700 | 700 | 600 |
| LI | 117,600 | 60,900 | 9,800 | 6,100 |
| II | 121,000 | 62,500 | 8,400 | 6,300 |
| IIIA | 310,200 | 146,100 | 37,000 | 13,500 |
| IIIB | 284,100 | 133,100 | — | — |
| IV | 279,300 | 132,500 | 16,500 | 10,900 |
| V | 606,700 | 232,500 | 75,800 | 26,800 |

* EF is equivalent to the San José phase in the Valley of Oaxaca.

other valley margins (southern Valle Grande and eastern Tlacolula). This pattern largely continued in Monte Albán II (Terminal Formative), when southern Valle Grande and Ejutla were more underpopulated relative to the amount of good agricultural land in those areas than were the subregions closer to the center.

In Monte Albán IIIA, population was, in general (except for the Etla subregion), more evenly distributed across the region, including Ejutla, relative to agricultural resources than in any other phase. The buildup in the Ejutla Valley was an extension of population expansion into the southern parts of the Valle Grande (Blanton et al., 1982, pp. 85–87). When the demographic core of Oaxaca shifted to Tlacolula later in the Postclassic period, Etla, southern Valle Grande, and Ejutla became more spatially marginal, a pattern that does not map onto the distribution of good agricultural land across this large region.

Thus it is not the physical similarity of land resources that accounts for what we see as similar developments in different parts of the larger region. Rather, spatial proximity to significant political and economic developments near cores (i.e., new centers of power) appears to have been more important. Ejutla, like eastern Tlacolula and southern Valle Grande, is spatially peripheral to Etla and the Central area, where the first centers in the Valley of Oaxaca were established, and early in the sequence settlement patterns in Ejutla are most similar to those two subregions (especially adjacent southern Valle Grande).

Throughout the sequence in both valleys, potential populations based on recorded site locations (i.e., farmers cultivating lands in close vicinity of their settlements) were always lower than maximal labor-based potential populations (i.e., available labor deployed on the best land in each region; Tables 3.5 and 3.6). There is less divergence between these two sets of figures for Ejutla than for Oaxaca and less divergence earlier in the sequence, prior to the establishment of Monte Albán in its hilltop location in the center of the Valley of Oaxaca, at which point the maximal labor-based potential population of Oaxaca was twice as high as the potential based on observed site locations. This same shift did not occur in Ejutla until Monte Albán II, which, as we discuss in the chapter for that phase, is when we believe the Monte Albán polity fully incorporated the Ejutla Valley into its realm. Clearly, sociopolitical factors and processes did influence settlement decisions.

In both valleys, archaeological populations remained below potential populations (based on labor at recorded site locations), although the closeness between these two estimates varied across space and over time. At the level of individual grid squares, there was more variability, especially later in the sequence, when larger settlements in the driest parts of the region may have not been able to grow enough corn to feed themselves in all years. In unusually dry years, the uneven distribution of population across the region relative to agricultural resources created a patchwork of areas where local agricultural production was not sufficient to feed the local population. Established exchange networks likely provided the shortfall from surpluses produced elsewhere. In the drier regions, especially eastern Tlacolula, xerophytic plants also likely were an important consumable resource (Feinman & Nicholas, 2005; Feinman et al., 2007).

TABLE 3.6. Potential populations based on available labor at recorded site locations, by phase, for Oaxaca and Ejutla.

| Phase | Archaeological population | Average-year potential* | Average surplus | Dry-year potential* | Wet-year potential |
|---|---|---|---|---|---|
| Valley of Oaxaca | | | | | |
| EF | 1,942 | 2,600 | 650 | 1,800–1,850 | 3,350 |
| Ros | 1,835 | 3,500–3,550 | 1,700 | 2,600–2,750 | 4,350 |
| EI | 14,652 | 19,400–19,800 | 4,950 | 12,700–13,400 | 26,200 |
| LI | 51,339 | 69,400–69,900 | 18,300 | 33,600–34,800 | 104,000 |
| II | 41,927 | 63,300–64,000 | 21,700 | 31,600–33,100 | 93,500 |
| IIIA | 120,121 | 148,600–149,100 | 28,700 | 70,700–71,700 | 224,900 |
| IIIB | 78,930 | 114,900–115,200 | 36,100 | 57,700–58,400 | 172,000 |
| IV | 77,162 | 82,800–84,100 | 6,300 | 23,500–24,500 | 141,600 |
| V | 166,467 | 346,500–346,900 | 180,200 | 140,800–142,200 | 551,700 |
| Ejutla Valley | | | | | |
| EF | 24 | 30–40 | 10 | 20–30 | 50 |
| Ros | 40 | 70–80 | 35 | 50–65 | 100 |
| EI | 259 | 525–625 | 300 | 300–500 | 750 |
| LI | 3,455 | 7,000–7,200 | 3,600 | 2,900–3,400 | 11,000 |
| II | 2,184 | 4,000–4,200 | 1,900 | 1,200–1,700 | 6,800 |
| IIIA | 14,656 | 19,000–19,200 | 4,500 | 6,800–7,400 | 31,100 |
| IIIB–IV | 3,029 | 10,000–10,300 | 7,100 | 3,300–4,000 | 16,700 |
| V | 19,970 | 52,100–52,300 | 32,200 | 18,800–19,200 | 85,400 |

* Low end of range based on equal use of Class I and Class II land; high end of range based on preference for Class I land. Wet-year potential is the same in both sets of calculations.

With increasing maize yields per unit area and rising populations over time, the potential for surplus production also increased (Table 3.6). Yet the calculated levels of potential surplus increased or decreased, depending on where settlements were established relative to good agricultural land (Feinman & Nicholas, 1987, 1991b). Clearly, greater surplus production was possible in areas with better farmland when the population was distributed to exploit it. That was not always the case, yet for both valleys individually or for the region as a whole, overall surpluses were possible throughout the sequence. Exchange networks that circulated food and other goods between individual settlements and larger subregions of the valley would have been essential conduits for distributing surpluses to the largest population centers and other areas in the valley where production was not enough to satisfy local demands.

## Scale of Analysis and General Trends across Highland Mesoamerica

Several recent studies have taken macroregional approaches to examine pre-Hispanic settlement patterns across parts or all of highland Mesoamerica (Balkansky, 1999, 2006; Finsten & Kowalewski, 1999; Smith, 2002; Kowalewski, 2004; Kowalewski et al., 2009). The general consensus of these works is that highland Mesoamerica was an integrated macroregion that is best understood by looking beyond the "borders" of individual regions (sensu Wolf, 1959). Comparisons of regional trajectories have revealed similar temporal trends in cycles of development and decline, of greater or lesser interaction and interdependence across broad areas, while also recording considerable variability from region to region. The variability, or messiness, tends to increase as the focus is placed on smaller and smaller spatial units. An important concept for dealing with this variability is "concordant change," that synchronous changes occurring across broad areas can have different local outcomes based on different local histories and conditions (Kowalewski, 1996, 2004, pp. 90–91; Smith, 2002, p. 4; Balkansky, 2006, p. 57).

### Scales of Analysis

Throughout this monograph, we draw, when relevant, on the results of the broad comparative analyses referenced above (e.g., Smith, 2002; Kowalewski, 2004; Balkansky, 2006; Kowalewski et al., 2009), a range of published reports on highland Mesoamerican survey projects (see discussion earlier in this chapter), surveys in the Central Valleys of Oaxaca (Blanton, 1978; Markman, 1981; Blanton et al., 1982; Kowalewski et al., 1989; Balkansky, 2002), and our investigations in the Ejutla Valley. We explicitly move between scales of analysis to place our findings from Ejutla within broader contexts. We do not give each scale equal time or space in every chapter but reference them as they provide essential background, reveal similar patterns, or help us interpret the more descriptive, detailed information that we present for Ejutla. Our selectivity also reflects the overarching and specific research questions, laid out earlier, that guide this research.

In addition, the data that we can draw on are not necessarily equivalent at every scale for each phase. The scales we consider, from the largest, generally, to the smallest are (1) the Mesoamerican world; (2) highland Mesoamerica; (3) the Southern Highlands (in the State of Oaxaca), including the Mixteca Alta; (4) the Central Valleys of Oaxaca, including the Miahuatlán and Sola Valleys; (5) the Valley of Oaxaca and the Ejutla Valley; (6) the subregions of the Valley of Oaxaca, including Ejutla as one subregion; (7) settlement clusters across these two valleys; (8) sectors of the Ejutla Valley; (9) the $4 \times 4$-km grid squares; (10) individual sites in Ejutla; and (11), for large sites in Ejutla, site subdivisions or barrios. When pertinent, we also give consideration to residential excavations that provide a perspective on the household.

To frame the broadest questions and to provide elements of context, we sometimes look explicitly beyond Oaxaca. For questions about cores and peripheries or changing regional boundaries and networks of exchange, we focus mainly on the Oaxaca highlands, where we have one of the largest, contiguous surveyed areas (8,000 $km^2$) in the world. For the effect that the development of centers (first San José Mogote and then Monte Albán) had on the local area and the span of their influence or control, we examine the Central Valleys of Oaxaca. Given its spatial and physiographic relationship with the Valley of Oaxaca and the difficulty of defining and drawing boundaries around regions, we consider Ejutla in several different ways. The questions that we want to address determine how broadly or narrowly we draw the boundary between these two valleys. At one-quarter the size of the 2,150-$km^2$ Valley of Oaxaca, Ejutla is more comparable in size to one of the valley's three arms than it is to its larger, northern neighbor as a whole. For some analyses, these valley arms or subregions are more appropriate units for comparison with the Ejutla Valley. Yet, as briefly introduced above, significant subregional variation already has been recognized for the Valley of Oaxaca (e.g., Feinman et al., 1985; Kowalewski et al., 1989). Adding Ejutla to the comparisons increases the size of the area for which we have comparable, detailed settlement pattern data to examine, for example, the effects of Monte Albán's rise and fall on the larger region. At other times, we compare Ejutla Valley settlement patterns to those in the Valley of Oaxaca as a whole.

### Basic Trends across Highland Mesoamerica

In her 2002 dissertation, Smith synthesized findings from dozens of regional archaeological surveys across highland Mesoamerica, including the Central Valleys of Oaxaca. The total area (noncontiguous) covered by the surveys is 40,500 $km^2$. Although project methodologies and the reporting of data were not as consistent as would be ideal, Smith ultimately was able to present a detailed comparison of diachronic trends across seven archaeological periods for 20 highland regions, covering an area of almost 12,000 $km^2$. The surveys not included in this subset provided more general information that figured into her final conclusions. Since Smith's analysis, Kowalewski and colleagues (Kowalewski et al., 2009) have completed a similar synthesis of all the regional projects carried out in the central Mixteca Alta, a 1,622-$km^2$ area comprising many smaller valleys and subregions northwest of the Central Valleys of Oaxaca. These two detailed, macroregional comparisons, as well as other summary presentations (e.g., Balkansky, 1999, 2006; Finsten & Kowalewski, 1999; Balkansky et al., 2000; Kowalewski, 2004), provide an excellent vantage on highland Mesoamerica through a lens that explicitly considers several scales of

analysis. These prior investigations have noted clear, broad diachronic trends in macroregional patterns of change and continuity but also considerable region-to-region variation. Although there were evident trends of increasing population and expanding settlement sizes over time, even at the macroregional scale growth was not constant, and there were periods of stasis or demographic decline. In the chapters that follow, these broad macroregional trends provide the background for situating our more detailed discussions of Ejutla and the Valley of Oaxaca during the roughly three-millennia-long pre-Hispanic era from the advent of the early sedentary communities to the Spanish invasion.

# Chapter 4: Initial Sedentary Occupation: Early and Middle Formative

> Social historians and historical sociologists have shown that the common people were as much agents in the historical process as they were its victims and silent witnesses.
>
> (Wolf, 1982, p. x)

The colonization and initial sedentary occupation of the Ejutla Valley occurred during the Early/Middle Formative (ca. 1500–500 BC). Although all the settlements in Ejutla were very small at that time, there was tremendous spatial variability in community size and population density across highland Mesoamerica (e.g., Balkansky, 1998a; Smith, 2002). A general macroscale trend was the development of regional site hierarchies, even though many areas, like Ejutla, were populated with small, often dispersed, relatively undifferentiated settlements. The highland regions where head towns emerged and the first regional site hierarchies developed include the Basin of Mexico, Morelos, the Mixteca Alta, and the Valley of Oaxaca (Fig. 4.1; Tolstoy, 1975; Tolstoy et al., 1977; Hirth, 1978, 1987; Sanders et al., 1979; Parsons et al., 1982; Kowalewski et al., 1983b; Kowalewski et al., 1989, p. 67; Blanton et al., 1993; Feinman, 1991b; Balkansky, 1998a; Smith, 2002, p. 291; Kowalewski et al., 2009). Communities in these regions were part of larger networks that extended outside the highlands. The nature of the relationship between these highland regions and the large communities in the Gulf Coast and beyond, however, have long been and remain a matter of debate (Flannery et al., 2005; Sharer et al., 2006; Pool, 2009; Rosenswig, 2010).

Several valleys in the state of Oaxaca were among the most densely settled highland areas during the Early Formative. There were population clusters in the central Mixteca Alta (especially Jazmín and Tilantongo), Nochixtlán (Etlatongo), and the northern, Etla arm of the Valley of Oaxaca, in which one large settlement was at the center of a site hierarchy with two or three tiers (Kowalewski et al., 1989, p. 66; Blomster, 2004; Kowalewski et al., 2009, p. 289, table 7.1). Settlements were smaller and more dispersed throughout the rest of highland Oaxaca.

The large head town of San José Mogote in the Etla arm of the Valley of Oaxaca is estimated to have housed more than 1,000 people by the end of the Early Formative period (Kowalewski et al., 1989, p. 61). When it was initially settled, this community had nonresidential buildings, which have not been found at contemporaneous settlements (Marcus & Flannery, 1996, pp. 87–88). Even the largest communities of the time in the Basin of Mexico and elsewhere in the highlands lacked comparable public architecture (Hirth, 1987, p. 353; Blanton et al., 1993, p. 115). As San José Mogote grew, so did the scale and diversity of its public architecture (Flannery & Marcus, 1976). Changes in burial populations, residential architecture, and associated sumptuary goods reveal increasing status differences (Flannery & Marcus, 1983a, p. 55; Marcus & Flannery, 1996, pp. 96–110; Blanton et al., 1999, pp. 34–39).

By the San José phase (Table 1.1), the growing center also had a significant centripetal influence on regional demography. The rate of population growth was higher in the Etla arm than for the valley as a whole (Feinman et al., 1985, table 2). Many of the small communities near San José Mogote lacked public architecture, and the residents of those settlements may have been tied to high-status individuals at the larger site (Feinman, 1991b, p. 245).

The relationship between San José Mogote and sites in other sectors of the valley is less clear (Kowalewski et al., 1989,

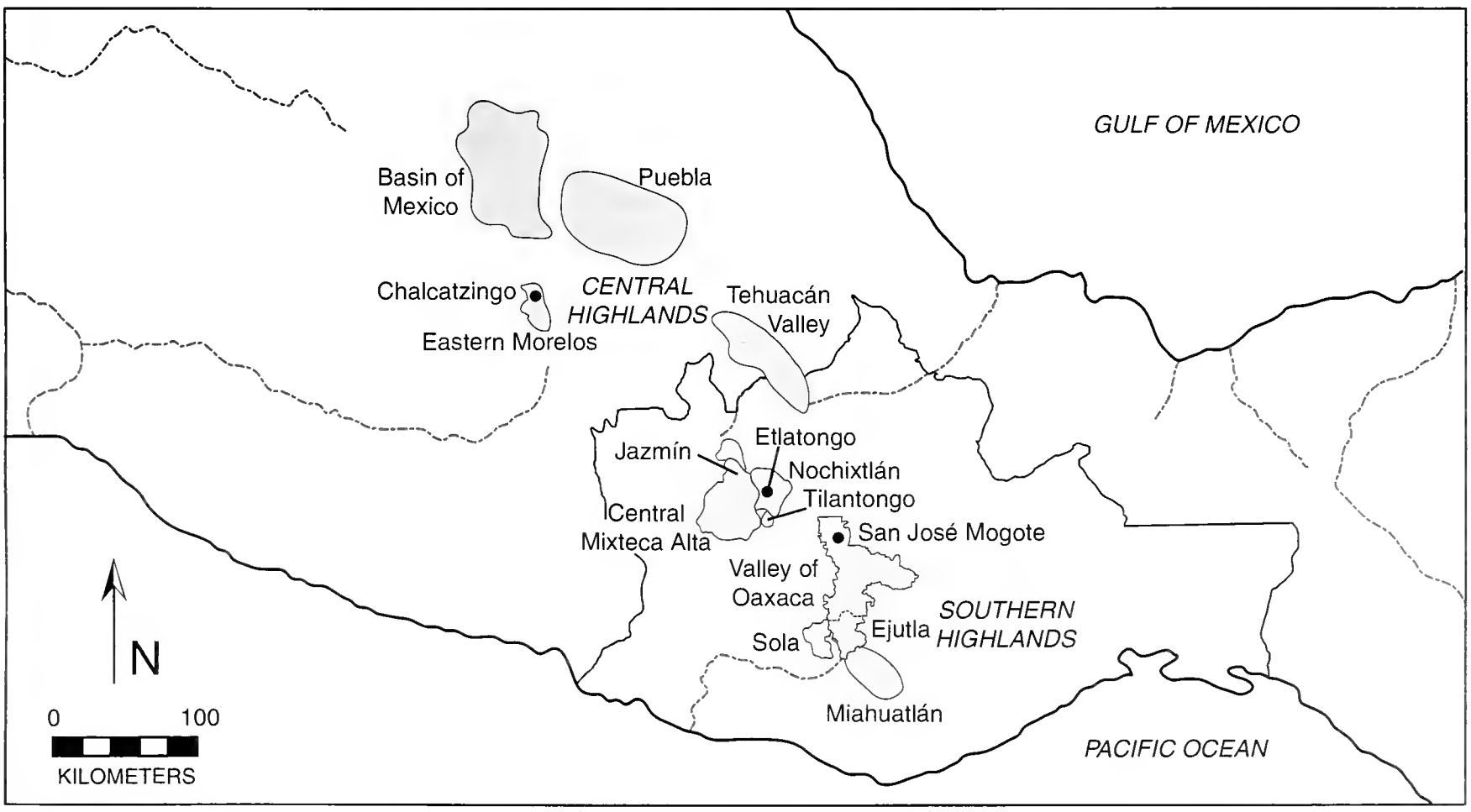



FIG. 4.1. Regions and sites in Oaxaca and central Mexico mentioned in the text.

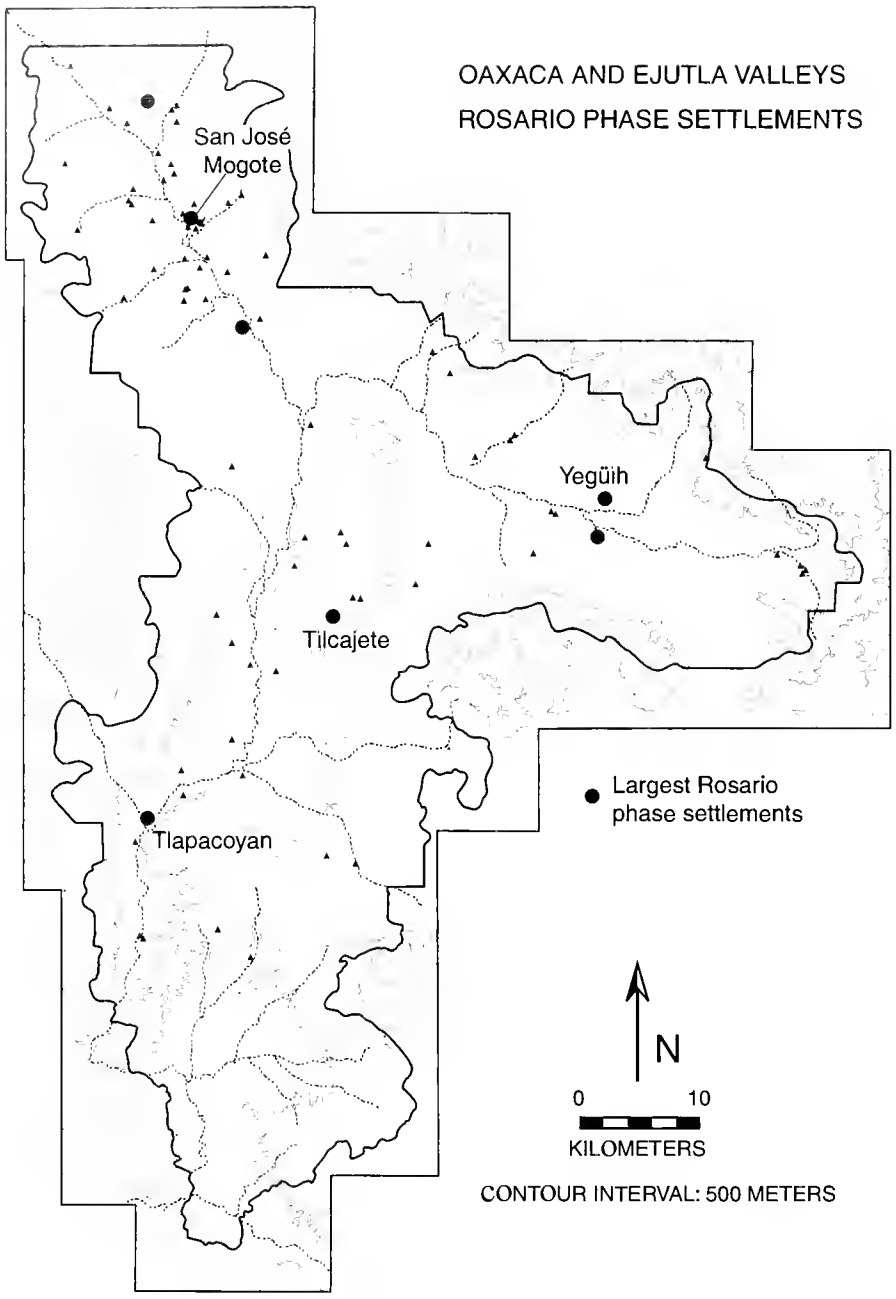



FIG. 4.2. Rosario phase settlements in Ejutla and the Valley of Oaxaca, showing location of the largest centers.

p. 66), but it appears that this early center did not exert much influence beyond the Etla arm of the valley during the Early Formative (Blanton et al., 1993, p. 69; Feinman, 2007, p. 6). Population densities dropped off rapidly with distance from the Etla subvalley (Nicholas, 1989, table 14.14).

By the Middle Formative (the Rosario phase in the Valley of Oaxaca, ca. 700–500 BC), the initial dominance of San José Mogote lessened as several smaller centers with public architecture were established in other arms of the valley, Yegüih in the Tlacolula subvalley, Tilcajete in northern Valle Grande, and Tlapacoyan in southern Valle Grande (Fig. 4.2; Kowalewski et al., 1989, pp. 78–79). Although the population was more evenly distributed across the valley, San José Mogote still remained the largest community, and the Etla arm retained its demographic advantage. Clusters of settlements were established around the other, smaller centers. The presence of sparsely inhabited areas, or shatter zones, between the settlement clusters indicates that these sets of spatially proximate communities may have developed into small polities that competed with or had degrees of autonomy from larger San José Mogote (Blanton et al., 1999, pp. 43–44).

This basic pattern was not unique in highland Mesoamerica. The coexistence of a dominant center surrounded by a cluster of smaller settlements with lower densities of settlement at greater distances from the center occurred in other highland regions at this time as well, including the Tehuacan Valley and in Puebla (MacNeish et al., 1972; Hirth, 1987; Plunket & Uruñuela, 2012). Beyond the Valley of Oaxaca, the best-reported settlement data are from the Mixteca Alta (Balkansky et al., 2000; Kowalewski et al., 2009) and eastern Moreles (Hirth, 1987). Although smaller than San José Mogote, Chalcatzingo in the Amatzinac River area of eastern Morelos presents a comparable case (Fig. 4.1). Like San José Mogote, Early and Middle Formative Chalcatzingo was twice the size of any contemporary community (Hirth, 1987, p. 351) and contained the only monumental architecture in the region (Grove, 1981; Prindiville & Grove, 1987). It also was one of the largest settlements in central Mexico at the time (Hirth, 1987, p. 355). Most of the population in the Amatzinac Valley lived in the vicinity of the large center; as Chalcatzingo increased in size over this time span, so did the density of settlements located nearby (Hirth, 1987, p. 353). Like San José Mogote, Chalcatzingo exerted a centripetal pull that attracted the area's populace to settle nearby.

The nature of these settlement systems offers a perspective on the spatial limits of socioeconomic power during the Early Formative and the beginning of the Middle Formative. Emergent centers provided economic opportunities and, perhaps, a greater degree of security to householders, prompting higher settlement densities within roughly a one-day walk, or 30–40 km (Drennan, 1984, p. 105), from these centers. At the same time, areas more distant from the centers could remain sparsely occupied even when they included fertile tracts of land.

In the Valley of Oaxaca, there were few settlements in the southern end of the valley south of Tlapacoyan, in either southern Valle Grande or the Ejutla Valley. That area, far from the Etla arm, appears to have been a largely vacant frontier that was only slowly colonized from the north. There also are no recorded Early/Middle Formative settlements in the Miahuatlán Valley (Markman, 1981) or the Sola Valley (Balkansky, 2002), the southernmost parts of the Central Valleys of Oaxaca. Here we follow the conceptual definitions advanced by John Friedmann and William Alonso (1969) and Raimondo Strassoldo (1980) to make the distinction between "frontiers" as open, sparsely settled, almost virgin areas of growth from "peripheries," which are dependent, more closed domains distant from the developed cores and perhaps linked to them through specific channels.

Why was there such a dearth of settlement in the Ejutla Valley compared to the Valley of Oaxaca? Ejutla was not sharply divided from the larger valley to the north by topographical barriers. Yet there were fewer people in the region than would be expected based on the distribution of land and water alone during the Early/Middle Formative. There are several large patches of prime agricultural land along the Ejutla River in the central part of the region (Fig. 3.7), yet that part of the Ejutla Valley was not settled until the Late Formative (Monte Albán I). Although data are limited, there is no evidence that linguistic boundaries formed in the area at this time (Marcus, 1983a, p. 7). Here we present the basic survey findings for the Early and Middle Formative in the Ejutla Valley, focusing on the size and location of the early settlements in the region and the nature of the area's integration with the larger polities of the Valley of Oaxaca. We come back to the question about the lack of settlements and hierarchy in Ejutla in the chapter's conclusion.

FIG. 4.3. Early Formative pottery in the Ejutla Valley: San José red on white (above), Atoyac yellow white (below left), and Delia white (below right); top right from EJ-SAA-SAA-15 (Amatengo), all others from EJ-EJ-SMC-7 (Chichihualtepec).

## Early Sedentary Communities in Ejutla

The earliest diagnostic ceramics found in the Ejutla region resemble Valley of Oaxaca wares of the San José phase (ca. 1150–850 BC). The clearest examples in Ejutla are San José red on white, Atoyac yellow white, and Delia white (Fig. 4.3; Flannery & Marcus, 1994, pp. 180, 221–222, 277), although other important types—Leandro gray, Delfina fine gray, and Lupita heavy plain (Flannery & Marcus, 1994, pp. 157, 259, 233)—also are present.

These Early Formative varieties are present at only three small sites in the study region (Table 4.1). At one site, Chichihualtepec (EF-1), we also found several sherds of ceramic varieties that date as early as the Tierras Largas phase (ca. 1500–1150 BC)—Tierras Largas burnished plain and Clementina red on buff (Flannery & Marcus, 1994, pp. 56, 75–76). These types reached their peak in the Valley of Oaxaca during Tierras Largas, but both continued to be used into at least the early San José phase (Flannery & Marcus, 1994, p. 55). Because we found them in contexts that also had several varieties of San José phase types, we do not think that their presence alone is sufficient to securely date the Chichihualtepec site to the Tierras Largas phase. We conservatively have dated sites with these early varieties to the broader Early Formative period (in comparisons, we draw most heavily on the San José phase settlements in the Valley of Oaxaca).

Two of the three Early Formative sites were situated near the northern boundary of the Ejutla district (Fig. 4.4). The early site at Santa Cruz Nexila (EF-2, in grid square N1E4) is located on a low piedmont rise on the east bank of the Atoyac River, roughly 10 km south of a small contemporaneous San José phase settlement near Santa Ana Tlapacoyan in southern Valle Grande. That part of the modern Ejutla administrative district lies outside the Ejutla Valley and is physiographically the southernmost extension of the Valley of Oaxaca. The second early settlement is Chichihualtepec (in grid square N1E5). That site is located next to a small stream in the low piedmont in the northern Ejutla Valley, approximately 2.5 km south of a small tributary that flows west to the Atoyac River. The tributary flows through a low pass in the ridge that separates the northern part of the Ejutla Valley from the Atoyac River, providing easy passage to the west. The third Early Formative site, at San Agustín Amatengo (EF-3, in grid square S4E5), is the southernmost settlement in the central valleys with Oaxaca-style Early Formative pottery. It is located on a low piedmont rise above a large bend in the Atoyac River yet is isolated from the other two early sites. All three sites were smaller than 0.5 ha in size.

The occupational density of the Ejutla region was sparse compared to the Valley of Oaxaca, where 26 Tierras Largas and 41 San José phase sites were recorded (Kowalewski et al., 1989). Early sites in Ejutla also are smaller. The average size of Early Formative (San José phase) sites in Oaxaca is considerably larger that those in Ejutla, even when San José Mogote (at 79 ha) is removed from the comparison (Table 4.2).

The pattern of settlement in Ejutla was not markedly different from that in the two Valley of Oaxaca subregions farthest from the Etla arm, where San José Mogote is situated. Early Formative settlement in Oaxaca quickly dropped off with distance from that large community (Fig. 4.5), and the total population in the most distant areas—eastern Tlacolula and southern Valle Grande—was low and similar to that of Ejutla (Table 4.3). Small settlement size and the lack of a clear settlement hierarchy (which was present in the Etla arm of the valley at that time) indicates to us that the Ejutla area was an open frontier settled by small groups of households that budded off from villages to the north, likely in the southern part of the Valley of Oaxaca (Kowalewski et al., 1989, fig. 3.2).

Based on the dispersion of sparse but diagnostic Rosario phase ceramics (especially, Socorro Fine Gray with pennant motifs (Blanton et al., 1982, p. 377), the settlement pattern of the Ejutla region underwent relatively little change during the subsequent Middle Formative period (Fig. 4.6). We found Rosario phase ceramics at the two Early Formative sites in northern Ejutla (Nexila and Chichihualtepec; Table 4.1) and at two new, nearby settlements. One of these new communities, EJ-EJ-SCN-19 (R-3, in grid square N1E4), was situated on a low rise right across the Atoyac River from the existing settlement in western Ejutla, Nexila (R-4); the

TABLE 4.1. Early and Middle Formative sites in the Ejutla Valley survey region.

| | Site no. and name | Grid square | Population | No. of mounds <1 m | No. of mounds ≥1 m | Mound volume ($m^3$) |
|---|---|---|---|---|---|---|
| EF-1 | EJ-EJ-SMC-7 (Chichihualtepec) | N1E5 | 8 | 0 | 3 | 4,026 |
| EF-2 | EJ-EJ-SCN-18 (Nexila) | N1E4 | 8 | 0 | 0 | 0 |
| EF-3 | EJ-SAA-SAA-15 (Amatengo) | S4E5 | 8 | 0 | 1 | 1,278 |
| R-1 | EJ-EJ-SMC-7 (Chichihualtepec) | N1E5 | 8 | 0 | 1 | 1,111 |
| R-2 | EJ-EJ-SMC-1 | N1E6 | 8 | 0 | 0 | 0 |
| R-3 | EJ-EJ-SCN-19 | N1E4 | 8 | 0 | 0 | 0 |
| R-4 | EJ-EJ-SCN-18 (Nexila) | N1E4 | 16 | 0 | 0 | 0 |

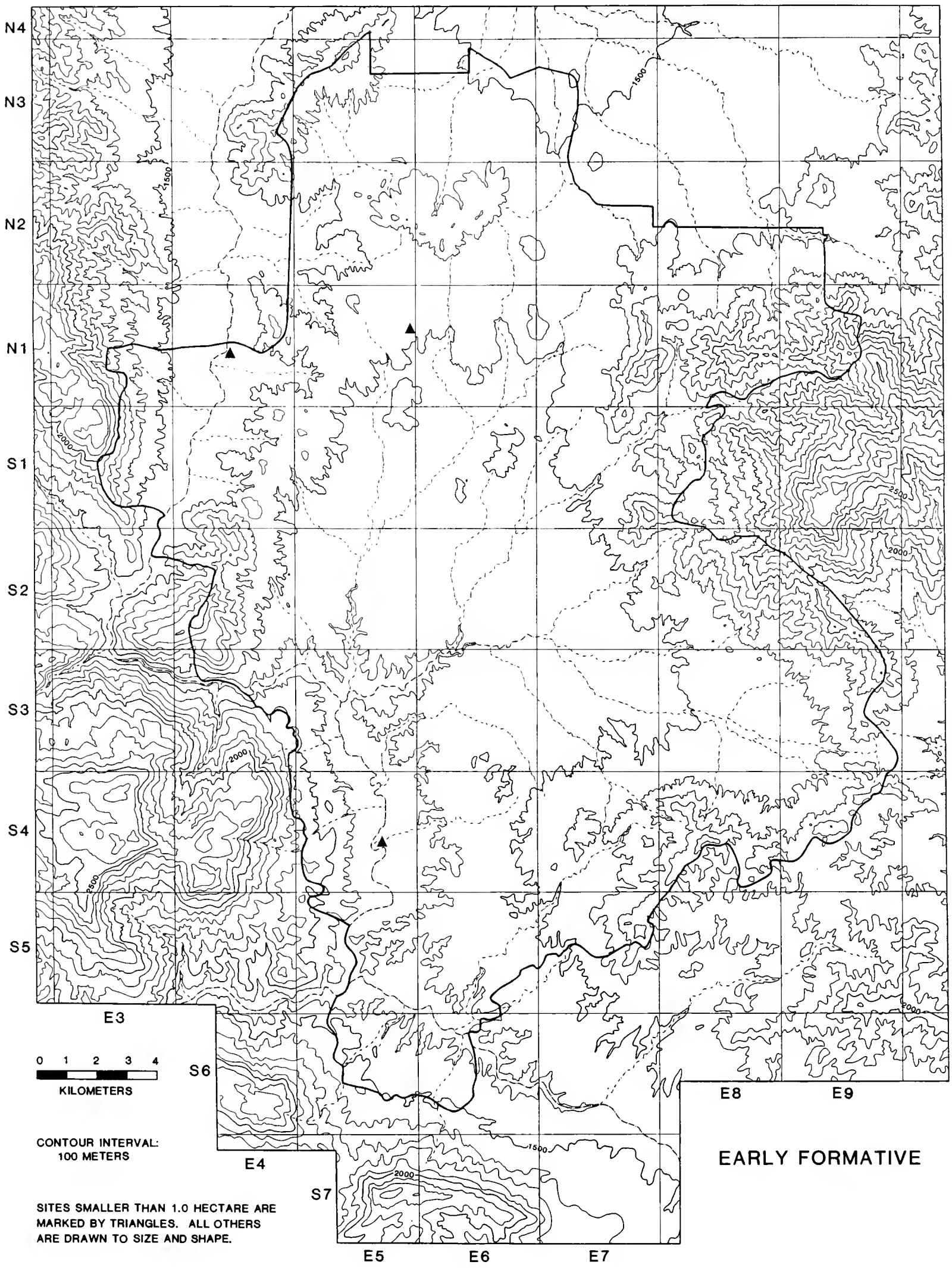



FIG. 4.4. Early Formative settlement in the Ejutla Valley.

other site, EJ-EJ-SMC-1 (R-2, in grid square N1E6), was located in the low piedmont of north-central Ejutla, along a northern tributary of the Ejutla River, not far from Chichihualtepec (R-1). The small earlier community at Amatengo (the most isolated Early Formative settlement) was abandoned by the Rosario phase.

The abandonment of the most isolated site and the addition of new sites near existing ones in northern Ejutla

TABLE 4.2. Population densities, component densities, and average site size for Ejutla and the Valley of Oaxaca in the Early and Middle Formative.

| | Early Formative | Middle Formative |
|---|---|---|
| Population densities/km$^2$ | | |
| Ejutla | <0.1 | <0.1 |
| Oaxaca | 0.9 | 0.9 |
| Oaxaca (without San José Mogote) | 0.3 | 0.6 |
| Component densities/100 km$^2$ | | |
| Ejutla | 0.6 | 0.8 |
| Oaxaca | 1.9 | 3.6 |
| Average site area (ha) | | |
| Ejutla | 0.2 | 0.4 |
| Oaxaca | 2.7 | 1.2 |
| Oaxaca (without San José Mogote) | 0.7 | 0.8 |
| Average site population | | |
| Ejutla | 8 | 10 |
| Oaxaca | 50 | 24 |
| Oaxaca (without San José Mogote) | 15 | 17 |

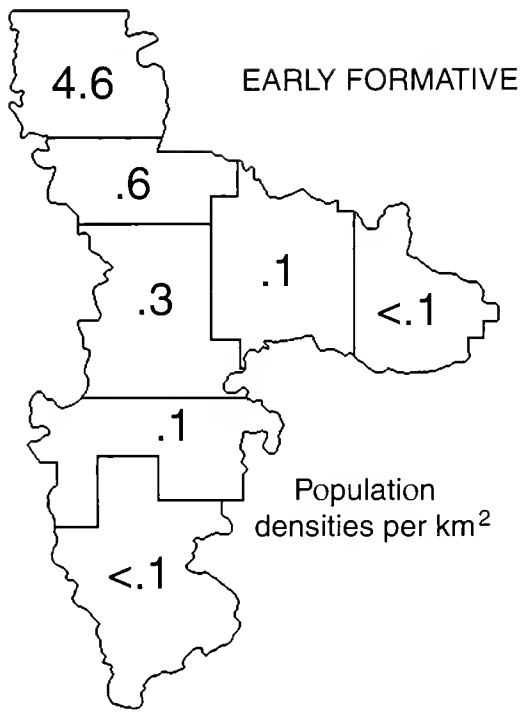



FIG. 4.5. Early Formative population densities in Ejutla and Valley of Oaxaca subregions.

may have been related to the formation of small centers that served as head towns or nodes of small competing polities in the Valley of Oaxaca. During the Rosario phase, San José Mogote diminished in size at the same time that other communities grew to intermediate sizes in the other arms of the valley. These new midsize settlements at the heart of small polities may have begun to compete with or assert degrees of autonomy from the earlier Etla head town. Located near the southern extension of a small polity centered at Tlapacoyan (Fig. 4.2), the frontier of northern Ejutla may have been less safe, leading to the abandonment of the site at Amatengo and the clustering of villages closer to Tlapacoyan at that time. Households and small communities in Ejutla may have ceded degrees of autonomy and wealth in exchange for the provisioning of defensive considerations (Blanton & Fargher, 2008) from emergent leaders at proximate Tlapacoyan.

With the exception of San José Mogote, which decreased in size after the Early Formative (Kowalewski et al., 1989, p. 72), Rosario phase sites in both valleys were slightly larger than Early Formative sites, and Oaxaca sites were slightly larger than Ejutla sites (Table 4.2). These average size differences, on their own, are not significant. More significant is the range of settlement sizes in each area. In accord with the Early Formative, there were several larger sites, likely centers, in the Valley of Oaxaca, and these centers were generally spatially associated with site hierarchies of two or three levels. In contrast, there continued to be no significant site size differentiation in the Ejutla region.

## Colonization

In a study of pre-Hispanic colonization of the Valley of Oaxaca (Nicholas et al., 1986), we found that land quality was an important but not the primary determinant of new settlement. New communities, especially in early phases, often settled on good but not the best land that was open or available. In the Oaxaca study we used the 4 × 4-km grid squares as the unit of analysis. The extension of this grid system into the Ejutla Valley added 48 grid squares, which we divided into four groups based on agricultural productivity. The three Early Formative sites in Ejutla were situated in grid squares that were in the top half in terms of agricultural productivity, but none were in the top quarter. All three settlements were located on low piedmont rises adjacent to relatively good farmland in the western half of the Ejutla survey region (Fig. 4.4). Two sites, Nexila (EF-2) and Amatengo (EF-3), were situated near narrow strips of floodwater land near the Atoyac River. The third site, Chichihualtepec (EF-1), was near a narrow strip of floodwater land and some high-water-table land along a major northern tributary of the Ejutla River. In all cases, most of the surrounding land was dry-farmed, yet the small patches of good land were sufficient to provide for the small Early Formative populations. In a very dry year, the site at Amatengo would have been most at risk. The presence of sites near the narrow floodplain of the Atoyac River as it passes through Ejutla and their absence on the much larger patches of alluvial terrain along the Ejutla River in central Ejutla provides an empirical basis to reason that the Ejutla region was colonized by people with ties to the north, with communication networks and the budding off of new settlements following the Atoyac River. The Ejutla River basin lay beyond the settlement frontier at that time.

The two new Rosario sites were located near existing settlements, whereas the most isolated Early Formative site at Amatengo was abandoned. The new site at EJ-EJ-SCN-19 (R-3) was situated across the Atoyac River from Nexila (R-4), the prior Early Formative site, which continued to be occupied. The other new Rosario site, EJ-EJ-SMC-1 (R-2), was positioned near a small patch of Class I land on a northern tributary of the Ejutla River near Chichihualtepec (R-1). With this new settlement, one of the three occupied grid squares was among the top 25% in Ejutla. Still, larger patches of good land along the Ejutla River and its major tributaries, including the best large patch of agricultural land in the Ejutla Valley that is one of the 25 most productive catchment areas (circles with radius of 2 km)

TABLE 4.3. Estimated archaeological, resource-based, and average labor-based potential populations for Ejutla and Valley of Oaxaca subregions in the Early and Middle Formative.

| | Ejutla | Etla | Central | Northern Valle Grande | Southern Valle Grande | Western Tlacolula | Eastern Tlacolula |
|---|---|---|---|---|---|---|---|
| Early Formative | | | | | | | |
| Estimated archaeological population | 24 | 1,573 | 160 | 106 | 43 | 50 | 10 |
| Resource-based potential population* | 30,100 | 31,900 | 15,500 | 32,000 | 27,800 | 27,200 | 13,300 |
| Average labor-based potential population** | 35 | 2,100 | 200 | 150 | 70 | 70 | 12 |
| Middle Formative | | | | | | | |
| Estimated archaeological population | 40 | 882 | 189 | 203 | 153 | 299 | 109 |
| Resource-based potential population* | 36,700 | 40,000 | 19,100 | 40,000 | 34,800 | 33,100 | 16,100 |
| Average labor-based potential population** | 70 | 1,900 | 350 | 350 | 300 | 450 | 175 |

* Based on full exploitation of all agricultural land resources in each subregion.

** Based on available labor supply and equal use of Class I and II land near archaeological settlements.

in the Ejutla-Oaxaca combined region (see Nicholas, 1989, pp. 470–477), remained unsettled. Proximity to the Atoyac River and contemporaneous settlement in the Valley of Oaxaca was a more important factor in the location of new communities in Ejutla than the quality of agricultural land alone.

## Public Architecture

Although we mapped mounded architecture at two of the Early Formative sites in Ejutla, it is difficult to ascertain whether these mounds were built during the settlements' initial phase of occupation. Early Formative pottery was present on one of 10 mounds at Amatengo (EJ-SAA-SAA-15; Fig. 4.7; Appendix IX, Fig. 33) and on all three mounds at Chichihualtepec (EJ-EJ-SMC-7; Fig. 4.8; Appendix IX, Fig. 23), for a total mound volume of 5,304 $m^3$. Nevertheless, both sites were occupied during several later phases, especially Monte Albán Late I, II, and IIIA, and the earthen structures or mounds may pertain to those phases.

At Amatengo, we found no Rosario phase ceramics at the site, and only a small sector of the site had Monte Albán Early I ceramics. The Early I part of the site, however, was spatially discrete from the area where we found Early Formative ceramics. The site was much larger in Late I and especially in Monte Albán II/IIIA, when all mounds at the site were associated with pottery from those phases. Most likely, the later (Late I) site was constructed on top of a very small, previously abandoned Early Formative occupation that had lacked earthen mounds.

The interpretation of Chichihualtepec is more complicated. Although all three mounds have Early Formative ceramics, only the isolated mound at the site has Rosario phase ceramics. All three structures have Monte Albán Early I through II ceramics. The two-mound group at the site continued to be occupied in IIIA, and the isolated mound was reoccupied in Monte Albán V. The areal extent of the occupied area did not change appreciably through time, so we cannot use site size to argue that the structures were built during a later, significantly larger occupation. It seems unlikely that the two-mound group was constructed in the Early Formative, abandoned in the Rosario phase, and then reoccupied from Early I through IIIA. Rather, the Early Formative ceramics from a small early occupation likely were incorporated in the fill when the structures were built in a later phase, most likely by Late I (the site was largest in Late I and II). It is possible, though, that the isolated structure, which has both Early Formative and Rosario ceramics, was constructed as early as the Early Formative. Regardless of when the mounds initially were constructed, this site has the longest occupational history of any site in Ejutla, and it may have been a more important settlement than its measured size would indicate. (See Appendix VIII for additional descriptions of all sites with architecture, including significant artifacts found on all structures.)

The presence of mounds at two of the three Early Formative sites in Ejutla is consistent with the pattern in Oaxaca. Over all time periods, 23% of sites in the Valley of Oaxaca have at least one mound, whereas 46% of Early Formative sites do (Kowalewski et al., 1989, p. 62). The overall average of sites with mounds is 13% for the Ejutla Valley. Whereas the percentage of sites with mounds remained the same for Oaxaca during the Rosario phase, only one of four Rosario sites in Ejutla had mounded architecture. Because of the small sample for Ejutla, we do not believe that the difference between the Early Formative and the Rosario phase is highly significant. Rather, the important difference is that early sites in Ejutla and Oaxaca are at least twice as likely to have mounded architecture as later sites in their respective regions. The architecture may not have been constructed when the communities were initially settled, but the age, location, or other characteristic of the established sites may have given them an advantage or priority of place over newer sites that led to many—but certainly not all—becoming civic-ceremonial centers in later phases.

If we leave aside the issue of dating mounds at multicomponent sites, early Valley of Oaxaca sites with mounds were more likely to be occupied in the following phase than sites without mounds, and many of the Rosario phase sites with mounds became important centers in Monte Albán Early I (Kowalewski et al., 1989, p. 71). In the Ejutla Valley, the trend is less clear. Of the two Early Formative sites with mounds, one continued to be occupied in the Rosario phase, while the other one was abandoned. All four Rosario phase sites continued to be occupied in Monte Albán Early I. The number of mounds at Chichihualtepec, the only site where mounded architecture may have been built during the Rosario phase, possibly increased from one to three mounds during Monte Albán Early I. Yet the site was never larger than 3.5 ha and does not appear to have ever become an important civic-ceremonial center.

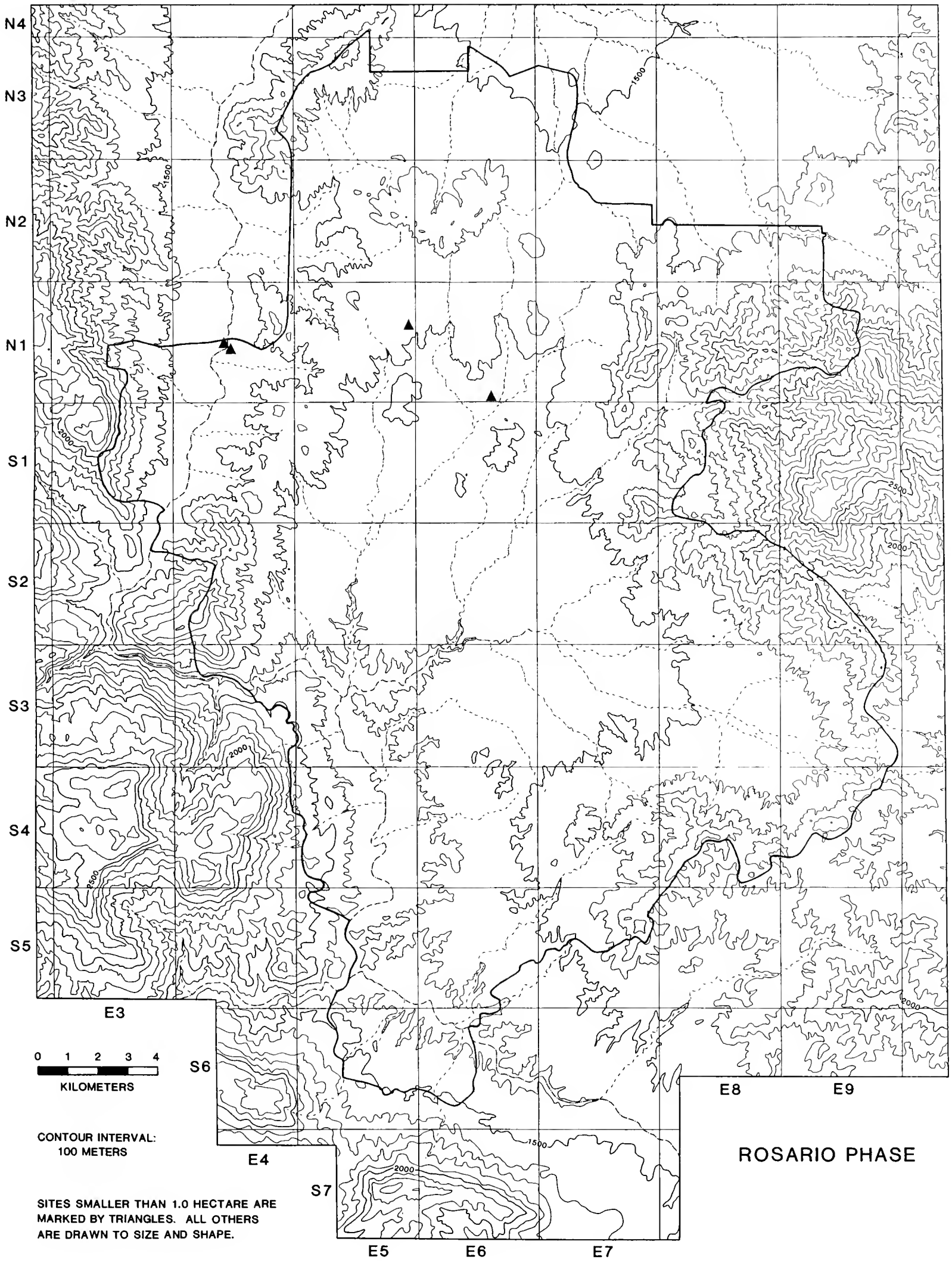



FIG. 4.6. Rosario phase settlement in the Ejutla Valley.

## Integration

Ceramic similarities across the Valley of Oaxaca, the low density of settlement, and the absence of subregional, multisettlement clusters outside the Etla arm indicate that the Valley of Oaxaca was, in some sense, a single cultural system or network during the Early Formative albeit not fully integrated for all activities (Kowalewski et al., 1989, p. 66). That is, the closer that communities were to San José Mogote, the more relations the inhabitants of those settlements likely had with people at the large

FIG. 4.7. Small plaza with mounds at Amatengo; Early Formative ceramics were present on Structure 4, in the top left of the photograph.

center (Plog, 1976). Marginal settlements near the edge of the system may have been only very loosely tied to the head town in Etla. As an extension of the sparse settlement near the Atoyac River in the southern part of the Valle Grande, the Ejutla region appears to have been part of the southern Oaxaca frontier, and its inhabitants likely had little if any direct contact with residents of San José Mogote.

Many Early Formative settlements in the Etla arm were within 2 km of each other at the same time that settlement was much more dispersed in other parts of the valley (Kowalewski et al., 1989, fig. 3.2). Tlapacoyan's nearest-neighbor in southern Valle Grande was 8.5 km away (a significant round-trip). Its second nearest-neighbor, at a distance of 9.5 km, was in Ejutla. The two northernmost sites in Ejutla were about 6 km away from each other (Fig. 4.4). The site at Amatengo was almost 17 km from both its first and its second nearest-neighbor. Even though this distance is within the presumed limits of a one-day round-trip (Drennan, 1984), this isolation may have been an important factor in the site's (and others along the margins of the Valley of Oaxaca) subsequent abandonment.

Changes in settlement patterns provide evidence for an important distinction between the Early and Middle Formative periods. During the Rosario phase in Oaxaca, the population (and the number of sites) in southern Valle Grande and eastern Tlacolula increased as modest centers grew and

FIG. 4.8. Structures 1 and 2 at Chichihualtepec.

new hamlets were occupied in both areas (Kowalewski et al., 1989, pp. 69–83, map 1; Marcus & Flannery, 1996). Yet the population density of the Ejutla region (.08 people per $km^2$) was less than 25% of that of eastern Tlacolula, the most sparsely inhabited subregion in the Valley of Oaxaca at that time (Feinman & Nicholas, 1992a, p. 93; Fig. 4.9). Miahuatlán to the south was still unoccupied.

Two of the new Valley of Oaxaca centers were in Ocotlán (San Martín Tilcajete) and southern Valle Grande (Tlapacoyan; Fig. 4.2). The small Early Formative settlement at Tlapacoyan became a small center in the Rosario phase, and several new hamlets were settled in the area, including in the Ejutla Valley. The first settlements in the Ocotlán subarea just north of Ejutla were settled at that time (Kowalewski et al., 1989, map 1). The four sites in Ejutla form two small local clusters, both of which include one new site and one that was occupied during the Early Formative. The two sites along the Atoyac River were less than 0.5 km away from each other; the distance between the other two sites was 3.5 km. Tlapacoyan, the nearest Oaxaca center, was 9 km away from the Atoyac River sites in Ejutla. The second cluster, in north-central Ejutla, was only slightly more distant from Tlapacoyan (10.5 km). Even though a barren, eroded piedmont ridge separates the Atoyac River from the northern tributaries of the Ejutla River, the small tributary stream that carves an easy passage through part of the ridge system provided easy access to Tlapacoyan from north-central Ejutla.

The first and second nearest-neighbor distances for the Ejutla Valley sites are within the range for all sites in the Valley of Oaxaca, where the maximum first nearest-neighbor distance was 12 km and the maximum second nearest-neighbor distance was 13 km (Kowalewski et al., 1989, p. 73). Yet the Ejutla sites were still among the most isolated–among the 5% of sites in the combined survey area whose second nearest-neighbor was more than 9 km away. Some of the most isolated sites in the Valley of Oaxaca were in the Ocotlán subarea of the Valle Grande, just north of Ejutla.

The other new center, San Martín Tilcajete (Kowalewski et al., 1989, p. 79; Spencer & Redmond, 2001a, 2003, p. 33), was over 25 km (in the northern part of the Ocotlán subarea) from

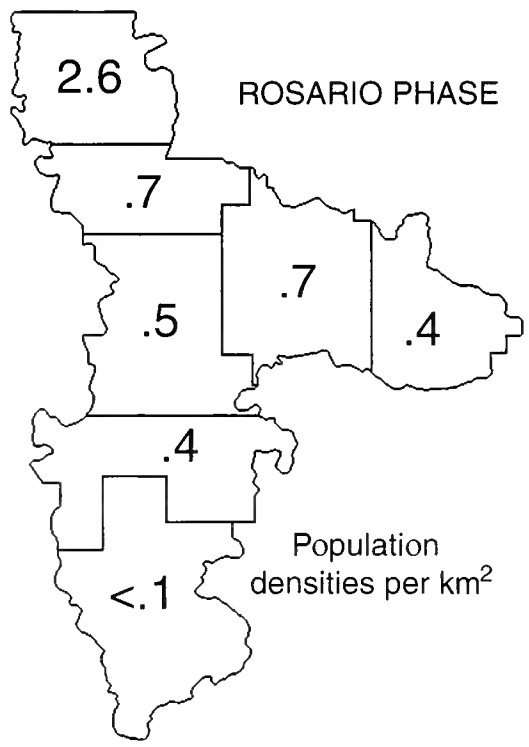



FIG. 4.9. Rosario phase population densities in Ejutla and Valley of Oaxaca subregions.

the nearest site in the Ejutla region; it is not clear what (if any) connection existed between Tilcajete and the small hamlets in Ejutla. In addition, several small hamlets in southern Ocotlán were much closer to sites in Ejutla (10–11 km) than to Tilcajete (20 km), indicating that this part of the valley continued to be a frontier area. Still, Rosario phase sites in Ejutla were closer to small centers in Oaxaca than Early Formative sites had been. The most important link to Oaxaca continued to be the Atoyac River, through Tlapacoyan. Like Rosario settlements in the Valley of Oaxaca, all of which are within 15 km of one of four centers (San José Mogote, Santa Ana Tlapacoyan, Yegüih, and San Martín Tilcajete), all Rosario phase sites in Ejutla are within 15 km of Tlapacoyan. Yet a second link or communication channel, through northern Ocotlán, which became important in later phases, may have had its origin at this time.

In the combined survey region, there were only 15 Rosario sites with populations of 20 or more. More than half (nine) were in Etla. The settlements in the northern part of the Valley of Oaxaca form a fairly well defined cluster (Fig. 4.10). The other seven were widely dispersed across Tlacolula and the Valle Grande (none were in Ejutla) in three very loosely defined clusters. The four small sites in Ejutla most likely belong to the cluster around Tlapacoyan. Each of these clusters also contains at least one of the region's seven largest settlements (with populations over 50), three of which were in Etla. Yet the small size of the region's total population makes it unlikely that any of these clusters were entirely autonomous or independent of the others (e.g., Wobst, 1974).

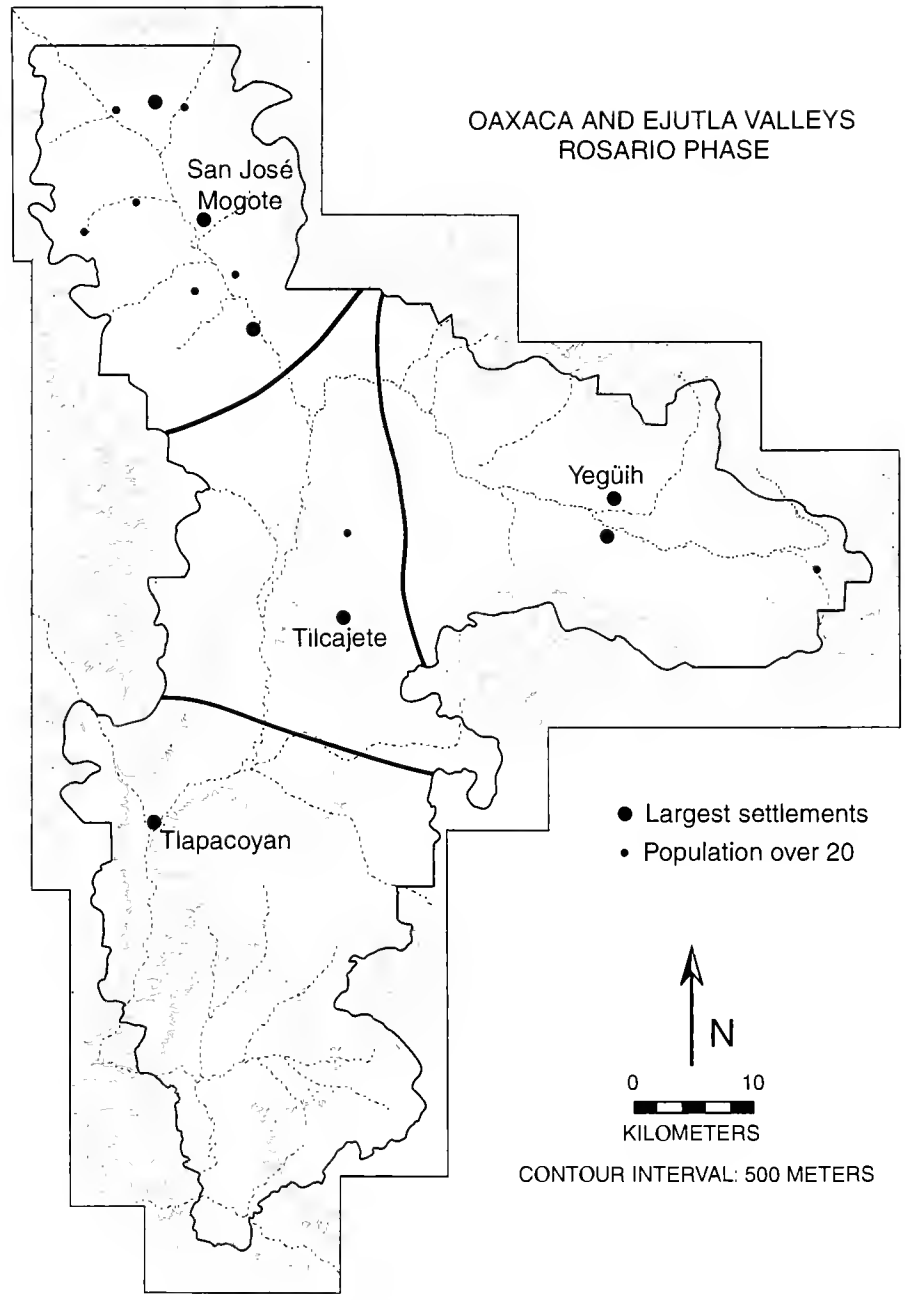



FIG. 4.10. Rosario phase settlement clusters in Ejutla and the Valley of Oaxaca.

## Human/Land Relationships

Given the low density of habitation throughout the entire Central Valleys of Oaxaca, it is hard to imagine that population pressure on land or food supplies existed during the Early and Middle Formative. We have already evaluated this issue for the Valley of Oaxaca and found estimated archaeological populations well below the potential agricultural productivity of the region given the technologies, resources, and labor available (Feinman & Nicholas, 1987, 1990b, 1992b; Kowalewski, 1982; Nicholas, 1989). Extending the land use analyses into the Ejutla region, we found that populations relative to resource-based potentials were even lower there (Table 4.3).

Only in one subregion of the Valley of Oaxaca did the estimated archaeological population approach 5% of its resource-based potential population (Etla during the Early Formative, and it was only 2% in the Rosario phase). In all other subregions, archaeological populations were never greater than 1% of resource-based potentials throughout this entire period. These percentage figures decreased with distance from the Etla arm of the valley, with the lowest percentages in the Ejutla region and eastern Tlacolula (0.1% or less). Even though San José Mogote may have held little sway over areas beyond the Etla arm, it still appears to have had some effect on the distribution of the population in the Central Valleys of Oaxaca.

Clearly, the population was far too low in the Valley of Oaxaca and the Ejutla Valley during the Early and Middle Formative to have ever made use of all the region's agricultural resources. Given low maize yields and variable rainfall patterns, lack of labor, not a lack of resources, was a potentially greater problem at that time. During the Early Formative, archaeological populations ranged from approximately 60% of labor-based potential populations in southern Valle Grande to just over 80% in eastern Tlacolula (Table 4.3). With small settlements (and a limited labor supply) throughout most of the Oaxaca and Ejutla Valleys, the ability to produce regular annual surpluses was low (Fig. 4.11). Only in the more densely settled Etla arm, where population was concentrated on good land near San José Mogote, were substantial surpluses possible. Potential surplus production was especially low in Tlacolula and Ejutla.

Although the Early Formative settlements in the Ejutla Valley could have grown more crops than they required for their own sustenance in average rainfall years, low-rainfall years may have presented more of a challenge, requiring greater reliance on wild resources and/or exchange with areas where rains had been more plentiful. The Early Formative site at Amatengo (in grid square S4E5) would have been at most risk during drought episodes, and the site was later abandoned.

With continuing low populations and rising maize yields during the Rosario phase, the maize surpluses that could be produced by the available labor supply increased considerably. The population in all subregions, including Ejutla,

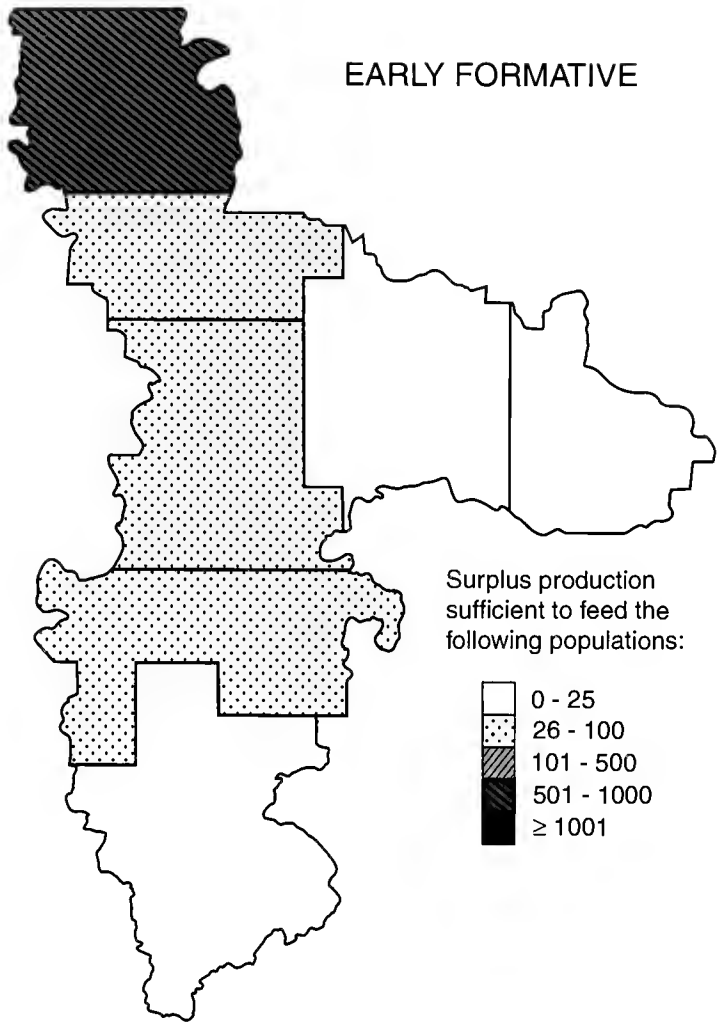



FIG. 4.11. Early Formative surplus in Ejutla and Valley of Oaxaca subregions.

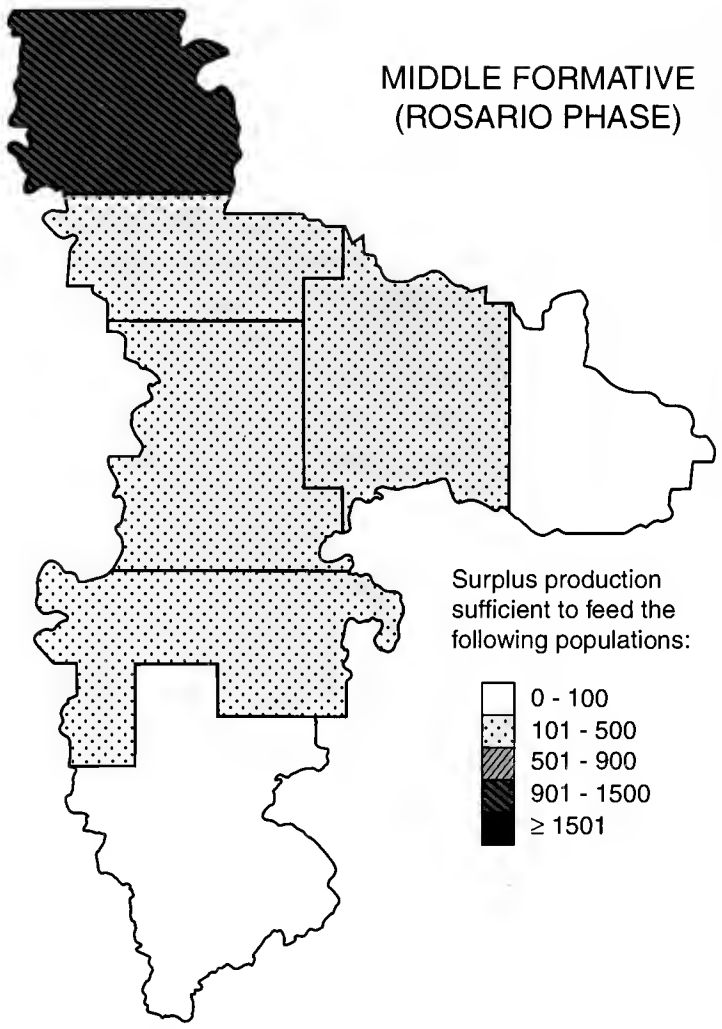



FIG. 4.12. Rosario phase surplus in Ejutla and Valley of Oaxaca subregions.

ranged from 50% to 65% of potential labor-based levels. Potential surpluses continued to be far higher in the Etla arm than elsewhere in the region (Fig. 4.12). The settlement cluster in which San José Mogote was situated could have grown twice the crops they needed, including for the residents of San José Mogote. Following a pattern similar to other demographic/land use calculations, surplus potential dropped off significantly with distance from the demographic concentration of people at and around San José Mogote. The valley margins of eastern Tlacolula and Ejutla, where populations were the smallest, continued to have low surplus-producing potential.

These findings make it difficult to build a case for causal models that rely on population pressure on primary productivity or agricultural resources to explain the emergence of hierarchical political institutions (e.g., Carneiro, 1965). Many parts of the Central Valleys of Oaxaca were vacant or sparsely settled during the pre–Monte Albán era, so the hiving off of households from communities situated in relatively more densely settled parts of the region (Etla) was an option (Nicholas et al., 1986). Over time, dispersal and the settlement of more distant parts of the valley system occurred, but so did the advent of more complex social institutions, well before any absolute and persistent pressure on resources was evident. The greater challenge for the emergent leaders at San José Mogote was attracting people (labor) to live near the site and finding ways to tap the production of that labor to support both their own somewhat more privileged positions (Marcus & Flannery, 1996, pp. 93–110) and sufficient disbursements of public goods (e.g., ritual activities, sponsorship of feasts, and defense) to maintain and attract significant populations to reside near the head town.

## Conclusion

An important question about the Early and Middle Formative period in Oaxaca is why was the population so aggregated in Etla relative to the rest of the Central Valleys of Oaxaca. The Etla arm, along with the adjacent Mixteca Alta northwest of the valley, was one of the most densely settled areas of highland Mesoamerica during the Early and Middle Formative. The Etla subvalley is one of the most productive parts of the Valley of Oaxaca but not the only one. There are larger tracts of prime agricultural land in the Valle Grande. Although we cannot explain why certain areas were settled early and others were not, clearly this settlement in Etla was part of broader macroregional processes that also saw the establishment of denser settlement in parts of the Mixteca Alta (e.g., Smith, 2002).

The addition of our findings for the Ejutla Valley, though, strengthens the prior understanding that, within the Valley of Oaxaca, San José Mogote was a special place that attracted people to settle nearby (Feinman, 1991b; Blanton et al., 1993, p. 58). By expanding the size of the area surveyed in the Central Valleys of Oaxaca, we have heightened the contrast, serving to increase the significance and distinctiveness of San José Mogote and the Etla arm, while documenting the clear effect of this larger settlement on the distribution of people across the larger valley system. More distant Ejutla was even less densely settled than the more peripheral parts of the Valley of Oaxaca–eastern Tlacolula, and southern Valle Grande. More distant parts of the Central Valleys of Oaxaca—Miahuatlán and Sola—were empty.

In several respects, there are physical similarities between the Etla arm and the main Ejutla River valley in central

Ejutla. Even though the Ejutla region in general is less agriculturally productive than Etla, terrain along the Ejutla River in central Ejutla is one of the 25 most productive patches (areas of 2-km radius) in the Central Valleys of Oaxaca. The modern town and the pre-Hispanic settlement beneath it sit on a low piedmont rise just above the best patch of farmland in the area, with good high-water-table farming. Like Etla, this small valley is relatively narrow. There are sources of clay and stone materials in the nearby piedmont and mountains. These mountains receive considerably more rain than the valley floor and provide excellent potential for irrigation along their bases. Yet this part of the Ejutla Valley was not settled for more than 1,000 years after San José Mogote. Even during subsequent excavations at the pre-Hispanic site under the modern town, we found no potsherds or other evidence of Early or Middle Formative occupation. If local environmental factors alone determined early settlement, we would not expect Ejutla to have lagged so far behind Etla. The real question here, which is beyond the scope of this work, is not why Ejutla lagged behind developments in Etla but why Etla was so precocious.

At this point, we can only offer a hypothesis. Perhaps, early in the Formative era, the most important socioeconomic networks for the Central Valleys of Oaxaca extended north toward the Mixteca Alta and central Mexico rather than south to the Pacific Coast of Oaxaca. If that were the case, then residing at San José Mogote may have had advantages over Chichihualtepec (or any other location in Ejutla). Once the initial settlement at San José Mogote was established, the inhabitants of the site could have utilized those networks to acquire exotic goods, such as obsidian. During the Formative period, most of the obsidian entering the Valley of Oaxaca came from the north, and that pattern only intensified over this period (Pires-Ferreira, 1975, 1976; Blomster & Glascock, 2011). With these advantages, San José Mogote grew into the region's preeminent head town, which then attracted settlement to the Etla arm of the Valley of Oaxaca. There were early political and economic advantages to living near this center—it provided defense, potentially greater access to exotic goods, and a larger social network that may have helped minimize agricultural risk during dry years or at times of other hazards. More distant parts of the valley, including Ejutla, were much less densely settled. The Ejutla region, at the southern edge of the Valley of Oaxaca, was a sparsely occupied frontier, largely unaffected by these early developments in Etla.

# Chapter 5: Population Expansion: Monte Albán I

> This movement of human beings from small hunter-gatherer groups to large and complex states can be viewed as one or two of the defining characteristics of world history during the last 10,000 years. Considered in the 100,000 year span of human history it has been revolutionary.
>
> (Melleuish, 2002, p. 322)

The era that we refer to here as the Late Formative (500–200 BC; Monte Albán I in the Valley of Oaxaca) was a time of dramatic change across highland Mesoamerica, characterized by rapid demographic growth, heightened episodes of nondomestic architectural construction, and population nucleation in larger settlements than ever had existed before. The growth in community sizes and the elaboration of regional settlement hierarchies generally were more pronounced in those areas that had the highest populations and most marked hierarchies during the prior Middle Formative (Table 1.1)—the Basin of Mexico, the Valley of Oaxaca, Puebla-Tlaxcala, and the Mixteca Alta (Fig. 5.1; García Cook and Rodríguez, 1975; Sanders et al., 1979; Kowalewski et al., 1989; Blanton et al., 1993, 1999; Serra Puche, 1998; Balkansky et al., 2000; Smith, 2002, p. 292; Kowalewski et al., 2009, p. 292; Plunket & Uruñuela, 2012). The larger polities that were centered in these regions extended their political, economic, and cultural orbits into nearby areas and adjacent smaller valleys. Growth was not evenly distributed across the highlands, and certain areas, such as eastern Morelos, lost their earlier preeminence. Chalcatzingo, located near the Amecameca Pass into the southern Basin of Mexico, declined in size and importance (Hirth, 1987, p. 361), likely losing out to the growing center of Cuicuilco, which became the largest site not only in the southern Basin of Mexico but in all of central Mexico (Hirth, 1978, p. 323; Sanders et al., 1979, p. 97 Grove, 2000, p. 149).

One region that experienced dramatic change was the Valley of Oaxaca, where one of highland Mesoamerica's first cities was established at Monte Albán, on a hilltop in the center of the valley's three arms, during Monte Albán Early I (ca. 500 BC; Blanton, 1978, p. 36; Blanton et al., 1999, pp. 72–73). Monte Albán far surpassed San José Mogote, the earlier head town in Etla, which continued, but as a much smaller secondary center (Kowalewski et al., 1989, p. 100; Blanton et al., 1999, p. 63). In the Valley of Oaxaca, population in rural settlements near Monte Albán grew rapidly (Feinman et al., 1985, p. 346), and the central part of the valley surpassed the northern, Etla arm as the most densely occupied subregion, with a total population that was more than twice that of Etla (approximately 6,800 compared to 3,100; Nicholas, 1989, table 14.14)

Elsewhere in the highlands, regional centers were established in the Basin of Mexico, Morelos, and Puebla (Sanders et al., 1979; Hirth, 1987, p. 363; Serra Puche, 1998), but with the exceptions of Cuicuilco in the Basin of Mexico (Cummings, 1933) and a large recently discovered site in Coixtlahuaca (Kowalewski et al., 2008), most were smaller than Monte Albán (Blanton et al., 1993, p. 115). Other large sites in the Mixteca Alta grew to about the size of secondary centers in the Valley of Oaxaca (Blanton et al., 1993, p. 115; Kowalewski et al., 2009, pp. 412–482). No Mixteca Alta center had the volume of public construction as found at Monte Albán, but there was population expansion around early centers in the smaller valleys of the Mixteca Alta, and settlement clusters in several valleys of that region (Coixtlahuaca, Tayata, Dzinicahua, Teposcolula, Tilantongo, and Tamazulapan; By-

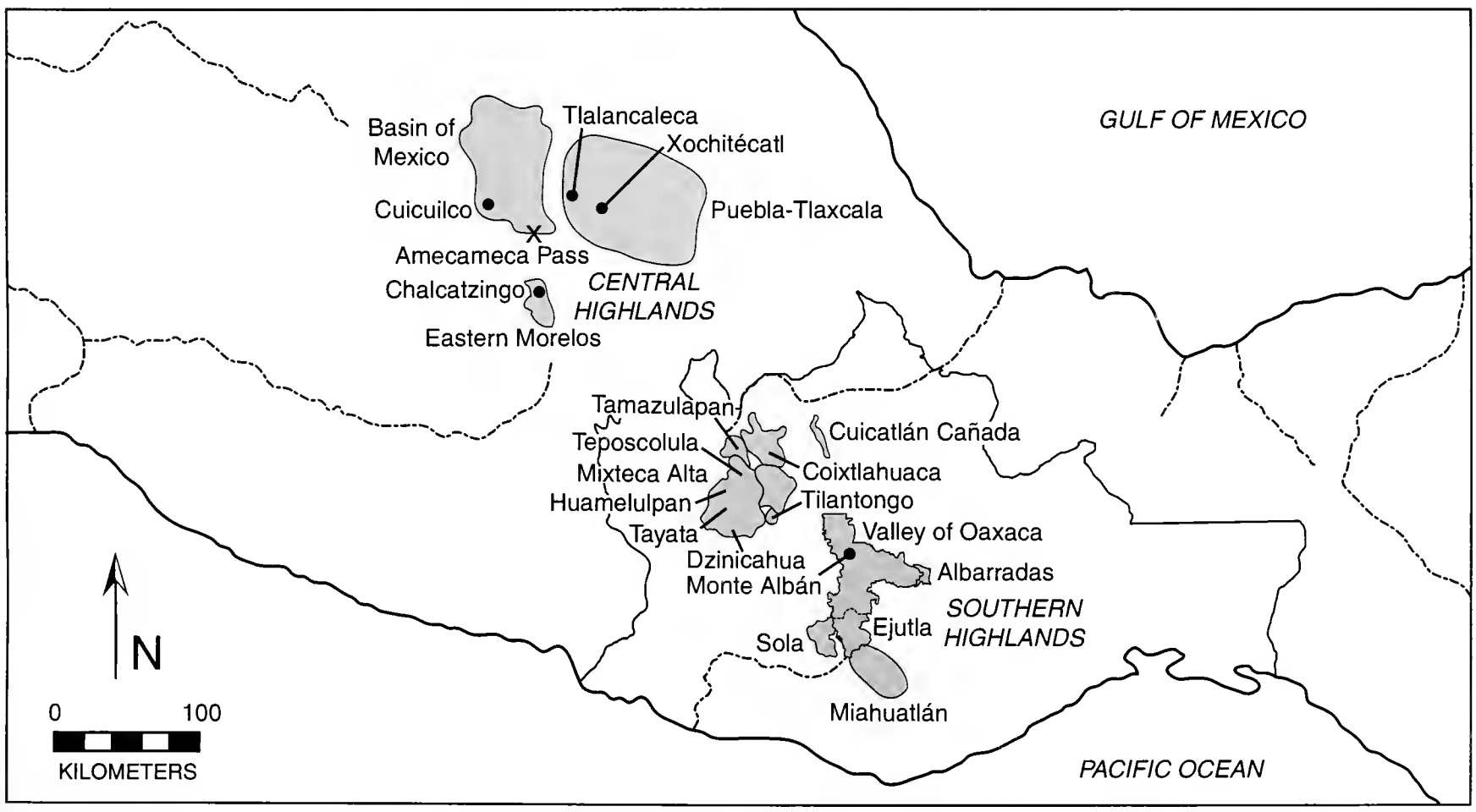



FIG. 5.1. Regions and sites in Oaxaca and central Mexico mentioned in the text.

land, 1980, p. 135; Kowalewski et al., 2009, p. 292, 2011) approached the aggregate population of Monte Albán and its immediate hinterland.

In highland Mexico, the last 500 years of the first millennium BC was the era when Mesoamerica's first states and cities were established. The foundation and rapid expansion of Monte Albán has long provided a focal case for investigating these processes (e.g., Blanton, 1978; Marcus & Flannery, 1996; Blanton et al., 1999; Spencer, 2003). With our main emphasis on Ejutla, we do not provide extensive new and direct evidence relevant to the rise of this iconic Zapotec hilltop center in the Valley of Oaxaca. Yet, by taking an expansive geographic vantage, we can offer new perspectives.

With the advent of systematic settlement pattern studies in the Mexican highlands, early models for the rise of states and cities often focused on environmental variables, specifically land and water resources, as having been at the root of political development (Palerm & Wolf, 1957; Sanders & Price, 1968; Sanders et al., 1979; Sanders & Nichols, 1988). Wittfogel's (1957) *Oriental Despotism*, in which the control of water was viewed as promoting political power (e.g., Sanders & Price, 1968), was highly favored. And yet, for highland Oaxaca, subsequent research has consistently found that large-scale, centralized water control was never historically significant and that small-scale agrarian production was always the rule in pre-Hispanic times (Kirkby, 1973; Feinman, 2006).

In conjunction with our colleagues (Kowalewski, 1980; Nicholas, 1989; Feinman & Nicholas, 1990b), we have repeatedly documented, using empirical findings, that Monte Albán was not situated on the most productive agrarian resources in the Valley of Oaxaca. Various other locales in the valley, both to the north and to the south, comprised larger expanses of fertile land and adequate access to water. But, from a larger-scale perspective, we do not think that land, water, geography, and topography were irrelevant to the rise of the largest and most monumental early city in the Southern Highlands' largest valley system. Monte Albán's early monumentality and size advantages over most if not all other centers in the Oaxaca highlands are, in our opinion, at least indirectly related to its central position in the largest swath of relatively flat land, an area not dissected by tall mountains (such as divide the smaller valleys of the Mixteca Alta). Without major topographic impediments to the movement of people and goods, prospective attempts at communication, cooperation, and power building in the Central Valleys of Oaxaca had certain advantages over other surrounding regions in regard to access to both labor and a diversity of goods.

Formative-era Monte Albán stands out from neighboring centers through the scale of its monumental construction and the hundreds of carved stone *danzantes* (depicting captives) that were incorporated into a public building at the site's apex (Marcus, 1976; Marcus & Flannery 1996, pp. 150–154). These activities required investments of labor. During Monte Albán I, people (labor) were drawn to the region's capital and immediate hinterland by economic opportunities and perhaps the potential for greater security. Natural growth alone could not have accounted for the rapid population increases that characterized the central sector of the Valley of Oaxaca during Monte Albán I (Feinman et al., 1985). From our vantage, the demographic concentration at and near the valley's capital was not an indicator of population pressure or too many people (Feinman & Nicholas, 1990b; Feinman, 1998), since adequate food resources would have been available from the city and its immediate hinterland even in dry years (Nicholas, 1989), but rather a signal of emerging power and collective action. For the next 2,000 years, the emergence of new centers, the construction of impressive public constructions, and the spatial concentration of power in Mesoamerica were generally correlated with rapid pulses of demographic growth and often in-migration. Leadership is by definition relational (Ahlquist & Levi, 2010, p. 5), and the successful provisioning of public goods (whether defensive protection, safe venues for trade, or redistributed food) serves to attract households in search of those opportunities. At the same time, exaction of the products of labor from those households provides a potential fund of power.

Given the central positioning and energy invested in the display of the *danzantes*, it has long been reasoned (Marcus, 1976; Marcus & Flannery, 1996, pp. 150–154) that military antagonisms and matters of offense/defense also had a key role in the rise of Monte Albán. During Monte Albán I, the region's central settlement expanded its influence in the Central Valleys of Oaxaca while also dwarfing, through the impressive public construction of the Main Plaza (Joyce, 2010, pp. 132–133), the monumentality of potential competition at farther distances. The basic impact of these actions and displays laid the foundation for the hegemony of Monte Albán in the region. The monumental public constructions at the top of the site provided this city with a power or aura of place that served to extend and amplify the site's locational advantages for at least a millennium (Marcus, 2009).

## Monte Albán Early I: The Foundation and Early Growth of Monte Albán

When Monte Albán was established on a hilltop in the center of the Valley of Oaxaca during Monte Albán Early I, the demographic center of the valley shifted southward from San José Mogote in the Etla arm to the previously sparsely settled Central subarea. The foundation of the new capital was accompanied by rapid growth in rural settlements near the site and in a series of new centers located throughout the region (Fig. 5.2; Feinman et al., 1985; Kowalewski et al., 1989, pp. 85–111). The development of a hierarchy of settlements based on population size is most evident in the center of the Valley of Oaxaca and in the Etla arm, where most of the larger Early I communities were situated. Of the 21 largest settlements (with populations over 100 people; Kowalewski et al., 1989, table 5.9), 14 were in Etla or Central, three were in Tlacolula, and four were in the Valle Grande.

In both the Valle Grande and Tlacolula, larger settlements were clustered toward the center of those arms. At the same time, a series of small, dispersed settlements in eastern Tlacolula and southern Valle Grande each have two to seven mounds (Levels III and IV in Fig. 5.3). The pre-Hispanic structures at these sites are associated with more than one ceramic phase, so the earthen features cannot be securely dated to just one time period. Nevertheless, based on comparisons to later phases, their possible role in boundary relations has been proposed (Kowalewski et al., 1989, p. 106).

Thus, in spite of its large size and rapid growth, Monte Albán's hegemony in the Valley of Oaxaca during Early I may not have extended very far beyond the Etla and Central subregions and the northern part of the Valle Grande (Feinman, 1998). Areas distant from the early capital experienced lower population growth than the area immediately around Monte Albán (Feinman et al., 1985). There were less developed

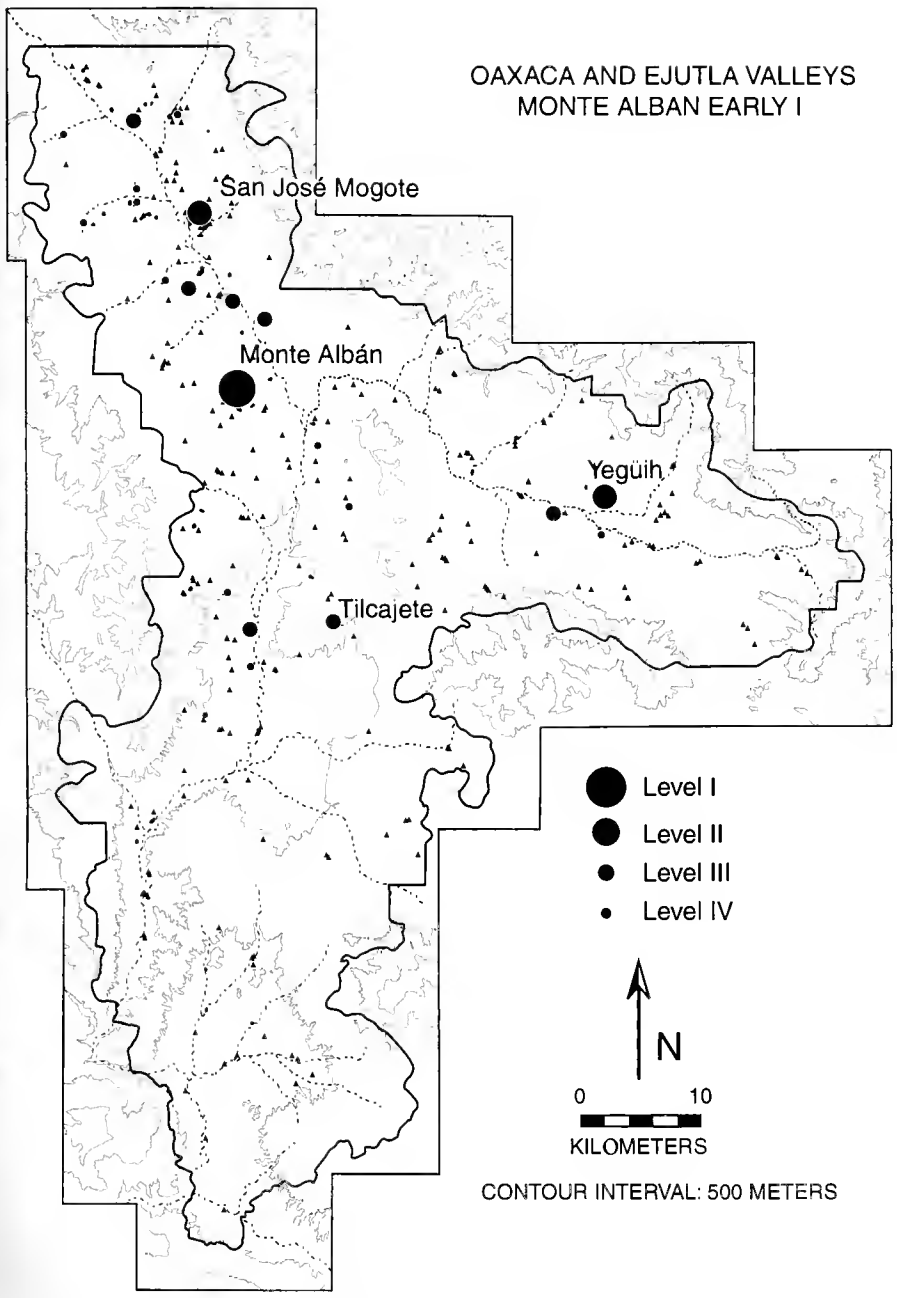



FIG. 5.2. Monte Albán Early I settlements in Ejutla and the Valley of Oaxaca, showing location of the largest centers.

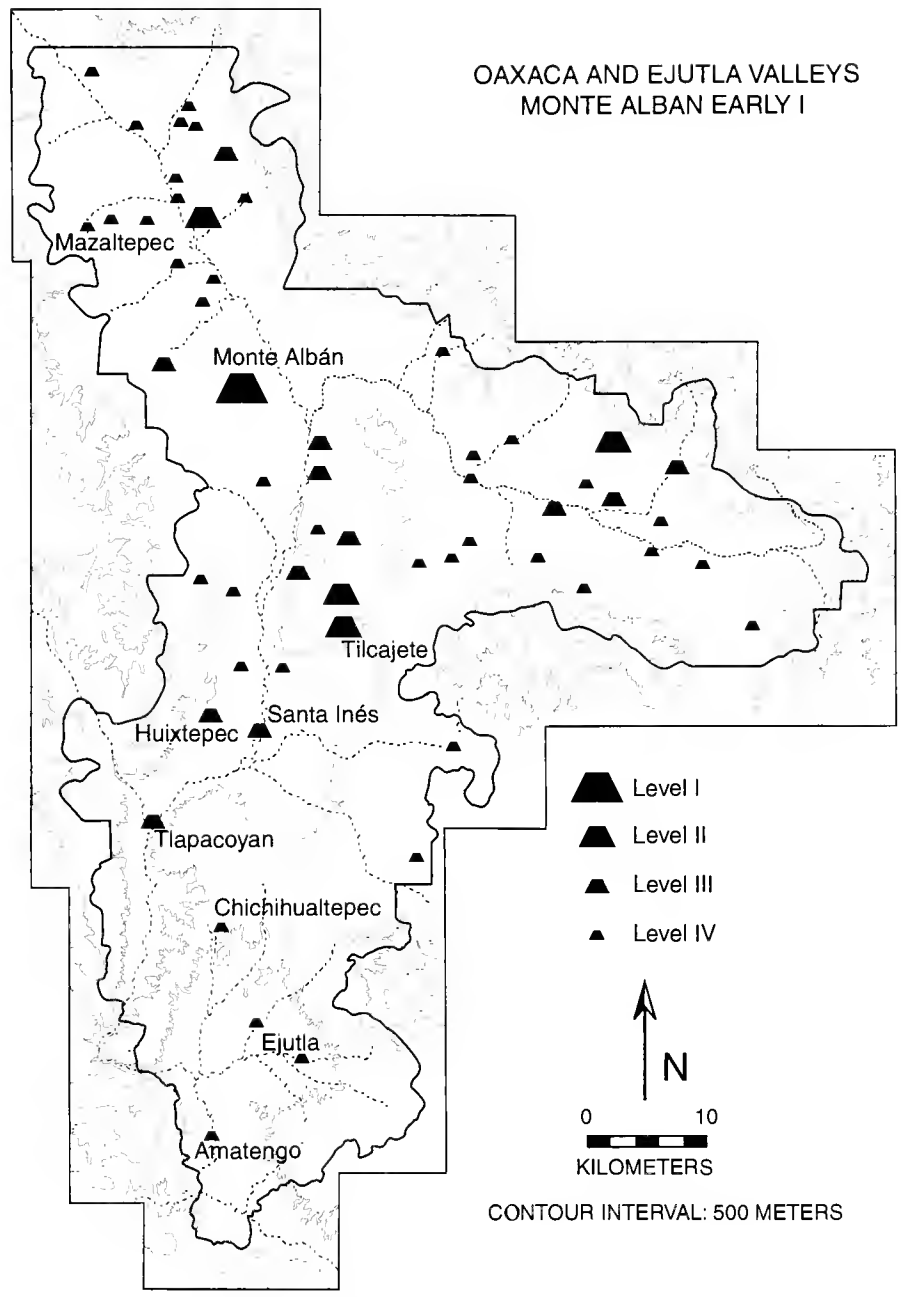



FIG. 5.3. Monte Albán Early I mound centers in Ejutla and the Valley of Oaxaca.

site hierarchies in Tlacolula and southern Valle Grande, which continued to have more dispersed settlement distributions.

A large area of the valley floor between Monte Albán and the Tlacolula arm remained largely unoccupied, indicating that people in Tlacolula may have been less integrated into the Monte Albán polity than those in the Valle Grande and that settlements in the Tlacolula arm continued to experience a degree of political and economic autonomy. In contrast, there were many new settlements in northern Valle Grande so that the earlier Rosario phase shatter zone disappeared (Kowalewski et al., 1989, p. 107). The two principal centers in northern Valle Grande, however, were not as large as San José Mogote in Etla or Yegüih in Tlacolula (Fig. 5.2), even though one of those centers, Tilcajete, more than doubled in size (Kowalewski et al., 1989, pp. 77, 100, 103; Spencer & Redmond, 2001a, 2003, pp. 38–39, 2004b).

The distribution of Early I crema (cream paste) pottery, which likely was made near Monte Albán (Feinman, 1982), corroborates the settlement pattern findings, with the abundance of this ceramic variety falling off with increasing distance from Monte Albán (Table 5.1; data from Kowalewski et al., 198, app. VI). Decorated crema pottery collected during the systematic surveys of the Valley of Oaxaca (Blanton et al., 1982; Kowalewski et al., 1989) forms approximately half the ceramic assemblages from sites in Etla and Central (the total percentage of cremas is higher, but undecorated types are less temporally diagnostic). In all other subregions, these diagnostic cremas constituted a much smaller proportion of the assemblage, approximately 20% in northern Valle Grande and half that in southern Valle Grande and Tlacolula. Decorated crema pottery in this phase serves a potential marker for the intensity of interactions between the central sector of the Valley of Oaxaca and more outlying areas.

Monte Albán's relations with the settlements of the Valle Grande may not have been entirely peaceful. At Tilcajete, the site's excavators interpret the burning of a public building as evidence of antagonistic relations between Tilcajete and Monte Albán, that Tilcajete's rulers, in the Ocotlán subarea on the eastern side of the Valle Grande, actively resisted incorporation into the Monte Albán polity (Spencer & Redmond, 2001a, 2003, 2004b, 2006; Redmond & Spencer, 2008). While this conflict appears to have been fairly localized, these animosities might have had a wider impact, making the area south of Tilcajete less secure and more dangerous for settlement. The Ocotlán subarea south of Tilcajete was the largest unoccupied expanse in the entire Valley of Oaxaca, whereas new settlements dotted the western part of the Valle Grande along the Atoyac River (Fig. 5.2; Kowalewski et al., 1989, fig. 5.1). The lower proportion of Early I crema pottery in surface collections at Tilcajete (12.5%) as compared to sites in northern Valle Grande (closer to Monte Albán) bolsters this interpretation (Table 5.1). Even though Tilcajete, based on

TABLE 5.1. Surface-collected Monte Albán I and II ceramics in Ejutla and Oaxaca.

| Subregion | Decorated crema | All crema | Gris | Café | Amarillo | % decorated crema | % crema | % gris | % café | % amar |
|---|---|---|---|---|---|---|---|---|---|---|
| Monte Albán Early I | | | | | | | | | | |
| Etla | 680 | 871 | 301 | 229 | 1 | 48.5 | 62.1 | 21.5 | 16.3 | 0.1 |
| Central | 380 | 531 | 148 | 14 | 0 | 54.8 | 76.6 | 21.4 | 2.0 | 0.0 |
| Northern Valle Grande | 162 | 230 | 385 | 145 | 3 | 21.2 | 30.1 | 50.5 | 19.0 | 0.4 |
| Southern Valle Grande | 33 | 39 | 97 | 104 | 0 | 13.8 | 16.3 | 40.4 | 43.3 | 0.0 |
| Western Tlacolula | 99 | 137 | 280 | 308 | 5 | 13.6 | 18.8 | 38.4 | 42.2 | 0.7 |
| Eastern Tlacolula | 26 | 31 | 145 | 77 | 1 | 10.2 | 12.2 | 57.1 | 30.3 | 0.4 |
| Ejutla | 10 | 19 | 92 | 58 | 4 | 5.8 | 11.0 | 53.2 | 33.5 | 2.3 |
| Tilcajete site | 6 | 8 | 28 | 12 | 0 | 12.5 | 16.7 | 58.3 | 25.0 | 0.0 |
| Monte Albán Late I | | | | | | | | | | |
| Etla | 789 | 1,246 | 985 | 484 | 2 | 29.0 | 45.9 | 36.3 | 17.8 | 0.1 |
| Central | 358 | 594 | 420 | 115 | 0 | 31.7 | 52.6 | 37.2 | 10.2 | 0.0 |
| Northern Valle Grande | 179 | 411 | 1,390 | 845 | 25 | 6.7 | 15.4 | 52.0 | 31.6 | 0.9 |
| Southern Valle Grande | 32 | 66 | 659 | 500 | 4 | 2.6 | 5.4 | 53.6 | 40.7 | 0.3 |
| Western Tlacolula | 51 | 147 | 710 | 403 | 9 | 4.0 | 11.6 | 55.9 | 31.8 | 0.7 |
| Eastern Tlacolula | 17 | 48 | 373 | 122 | 2 | 3.1 | 8.8 | 68.4 | 22.4 | 0.4 |
| Ejutla | 22 | 64 | 571 | 439 | 13 | 2.0 | 5.9 | 52.5 | 40.4 | 1.2 |
| Tilcajete site | 3 | 5 | 25 | 7 | 0 | 8.1 | 13.5 | 67.6 | 18.9 | 0.0 |
| Monte Albán II | | | | | | | | | | |
| Etla | 330 | 568 | 571 | 265 | 23 | 23.1 | 39.8 | 40.0 | 18.6 | 1.6 |
| Central | 165 | 285 | 192 | 49 | 7 | 31.0 | 53.5 | 36.0 | 9.2 | 1.3 |
| Northern Valle Grande | 329 | 475 | 914 | 867 | 255 | 13.1 | 18.9 | 36.4 | 34.5 | 10.2 |
| Southern Valle Grande | 100 | 103 | 355 | 291 | 71 | 12.2 | 12.6 | 43.3 | 35.5 | 8.7 |
| Western Tlacolula | 131 | 164 | 483 | 152 | 221 | 12.8 | 16.1 | 47.4 | 14.9 | 21.7 |
| Eastern Tlacolula | 56 | 62 | 216 | 34 | 83 | 14.2 | 15.7 | 54.7 | 8.6 | 21.0 |
| Ejutla | 62 | 110 | 270 | 280 | 57 | 8.6 | 15.3 | 37.7 | 39.1 | 7.9 |
| Cerro Tilcajete | 7 | 9 | 15 | 7 | 2 | 21.2 | 27.3 | 45.5 | 21.2 | 6.1 |

size, was a second- or third-order center in the region's settlement hierarchy, the proportion of crema pottery at the site was relatively low, similar to sites in southern Valle Grande. These regional patterns support the interpretation (Spencer & Redmond, 2008) that, in Early I, Tilcajete was likely not a direct dependency of Monte Albán and maintained a degree of political and economic autonomy.

Population in the Valley of Oaxaca dropped off markedly 30–40 km from Monte Albán (Kowalewski et al., 1989, p. 109). This pattern is not the simple consequence of the distribution of arable land and water but more likely reflected individual and household responses to economic opportunities and perhaps security considerations. Growth was lowest at the margins of the Valley of Oaxaca, especially in southern Ocotlán (Feinman et al., 1985). Although the rate of Rosario–Early I demographic increase (0.75%) in the Ejutla Valley was roughly the same as the rate of increase in southern Valle Grande and eastern Tlacolula (Feinman et al., 1985, p. 346; Feinman & Nicholas, 1990a, p. 225), population density in Ejutla was less than half the density of those two subregions (Fig. 5.4). As we describe in greater detail below, Ejutla continued to be a sparsely settled frontier largely unaffected by major changes taking place in the center of the Valley of Oaxaca. The Miahuatlán and Sola Valleys, at even greater distances from Monte Albán, continued to have even fewer settlements than Ejutla (Markman, 1981; Balkansky, 2002).

## Early I Settlement in Ejutla

At a time when population growth and societal change was affecting many aspects of life in the central part of the Valley of Oaxaca, change was occurring much more slowly in the Ejutla Valley, where settlements continued to be sparse and small (Fig. 5.5). Average site size in Oaxaca was more than five times larger than in Ejutla (three times greater when we exclude Monte Albán; Table 5.2). There was considerable subregional variation (Table 5.3), however, with Ejutla most similar to eastern Tlacolula and southern Valle Grande.

Population in the Ejutla Valley was not hierarchically organized. The 21 Early I settlements in Ejutla were

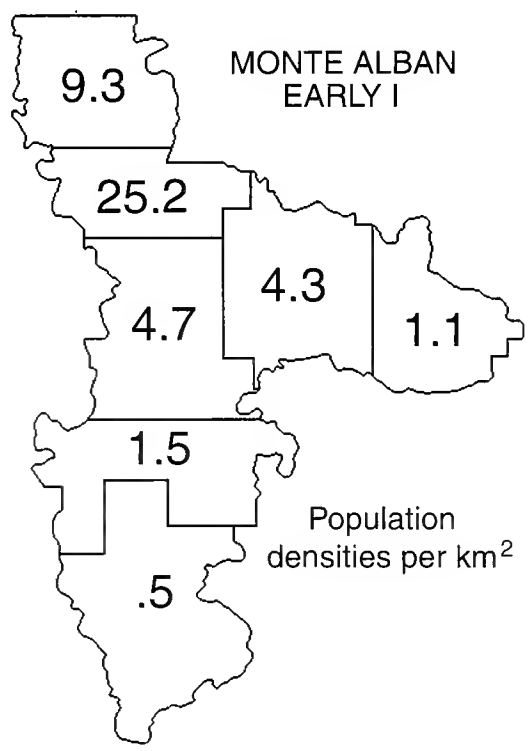



FIG. 5.4. Monte Albán Early I population densities in Ejutla and Valley of Oaxaca subregions.

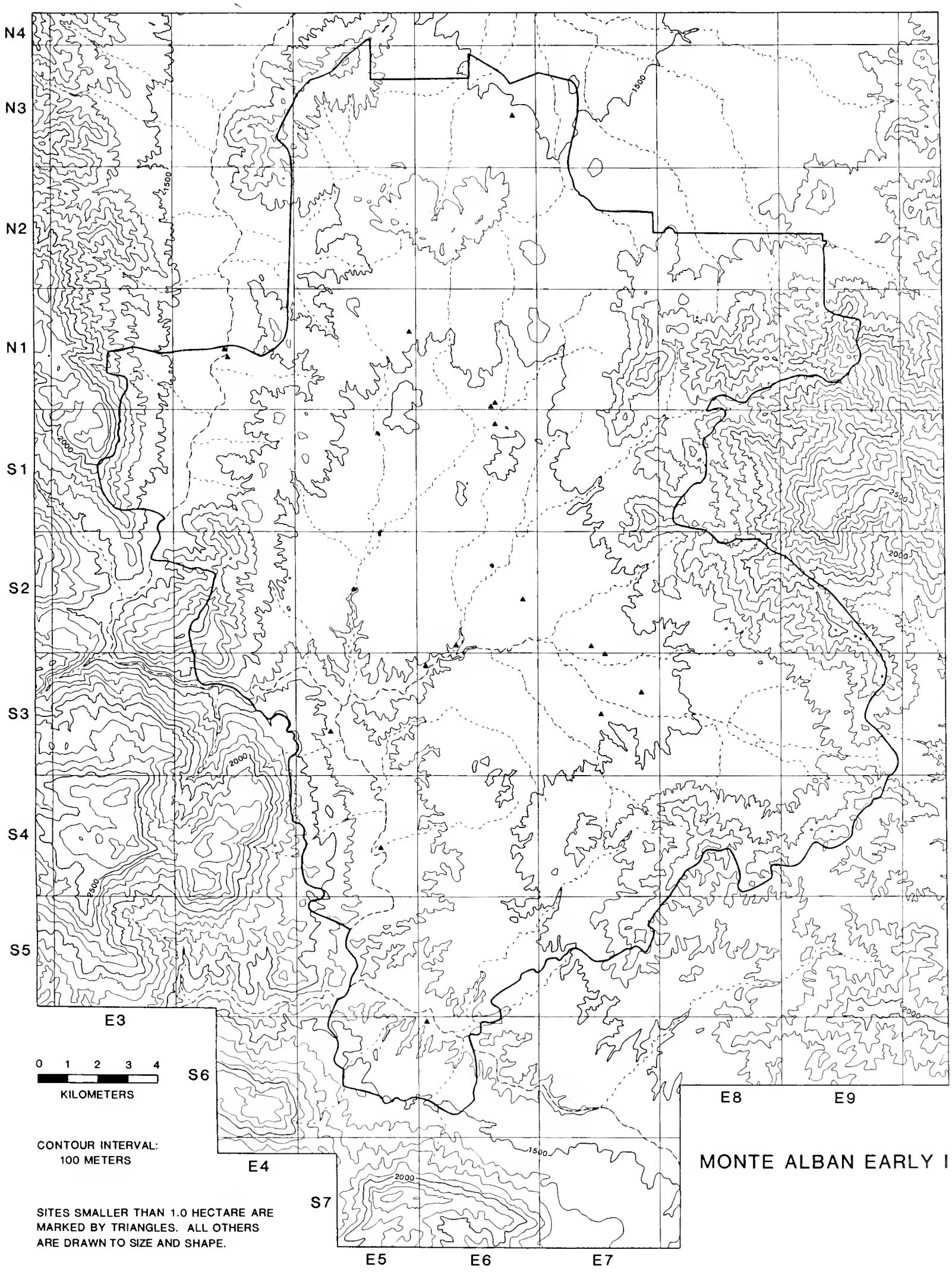



FIG. 5.5. Monte Albán Early I settlement in the Ejutla Valley.

uniformly small (Fig. 5.6), fitting into the lowest level of the settlement-size hierarchy for the Valley of Oaxaca (Table 5.4). Even though the two largest settlements were centrally located with respect to other sites in the Ejutla Valley, both were smaller than 2 ha and are estimated to have had around 30 inhabitants.

Settlements in Ejutla were situated in slightly better locations relative to good farmland than were Early I sites

TABLE 5.2. Population densities, component densities, and average site size in Ejutla and the Valley of Oaxaca in Monte Albán I.

| | Early I | Late I |
|---|---|---|
| Population densities/km$^2$ | | |
| Ejutla | 0.5 | 6.7 |
| Oaxaca | 6.9 | 24.1 |
| Oaxaca (without Monte Albán) | 4.4 | 15.9 |
| Component densities*/100 km$^2$ | | |
| Ejutla | 4.0 | 11.4 |
| Oaxaca | 11.9 | 29.9 |
| Average site area* (ha) | | |
| Ejutla | 0.6 | 3.6 |
| Oaxaca | 3.2 | 3.6 |
| Oaxaca (without Monte Albán) | 2.1 | 2.7 |
| Average site population* | | |
| Ejutla | 12 | 59 |
| Oaxaca | 58 | 80 |
| Oaxaca (without Monte Albán) | 37 | 53 |

* Combined sites.

in Oaxaca (Table 3.6). Contrary to the pattern in the Valley of Oaxaca, where sites that were initially settled in Early I were not on or near the best land available (Nicholas et al., 1986), nine of the 11 newly occupied grid squares in Ejutla were among the most productive available. With greater distance from the core of the Monte Albán political system and possibly less complete integration into exchange networks, the farmers settling Ejutla may have been more concerned with locating near good farmland.

Most Ejutla settlements were situated on the valley floor, along or near tributary streams in the low piedmont of north-central Ejutla, south of the earlier Rosario phase settlements. Settlements in this area account for half of the Early I population in Ejutla. For the first time, a number of communities were established along the Ejutla River in the central part of the valley. The most productive patch of land in all of Ejutla is located there, and four new small settlements were established nearby. This area went from having no Rosario phase settlements to housing 25% of the Early I population. The other subareas of Ejutla were sparsely settled or unoccupied, including the western subarea that had contained half the Rosario phase population. Only one new settlement was established in northernmost Ejutla, near the border with Ocotlán (Fig. 5.5, grid square N3E6). This site was much closer to several small sites in the Ocotlán subarea (4 km) (Fig. 5.2; Kowalewski et al., 1989, map 2) than to

TABLE 5.3. Number of sites, occupied area, and average site size for Ejutla and Valley of Oaxaca subregions in Monte Albán Early I.

| | No. of sites* | Occupied area (ha) | Average site size (ha) |
|---|---|---|---|
| Etla | 60 | 170.0 | 2.8 |
| Central | 39 | 403.7 | 10.4 |
| Central without Monte Albán | 38 | 79.7 | 2.1 |
| Northern Valle Grande | 57 | 102.9 | 1.8 |
| Southern Valle Grande | 29 | 27.9 | 1.0 |
| Western Tlacolula | 46 | 99.4 | 2.2 |
| Eastern Tlacolula | 22 | 15.1 | 0.7 |
| Ejutla | 21 | 12.1 | 0.6 |

* Combined sites.

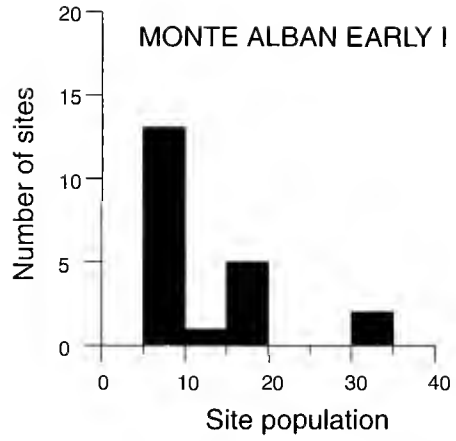



FIG. 5.6. Monte Albán Early I population histogram for Ejutla.

contemporaneous sites in Ejutla (8 km). It also was equidistant to two small mound sites in southern Valle Grande (9 km to Tlapacoyan and 8.3 km to Santa Inés) and Chichihualtepec (EI-2), the northernmost site in Ejutla (8 km) with possible Early I architecture (Fig. 5.3). This shift in settlement location may reflect a change from the Rosario phase pattern of interaction almost entirely along the Atoyac River to increasing interaction through Ocotlán. Yet the small Ocotlán sites are distant from all other communities in the Valle Grande. As noted previously, one of the largest unoccupied areas in the valley continued to be in the Ocotlán surbarea of southern Valle Grande.

South of the Ejutla Valley, the first recorded settlements in the Miahuatlán Valley pertain to Monte Albán I (Markman, 1981). The Miahuatlán study (Markman, 1981) did not distinguish Early I from Late I pottery, so we do not know if any of these sites are contemporaneous with the Early I settlements in Ejutla. Because we found so little Early I in Ejutla, we suspect that there also was little in Miahuatlán. We did record Early I pottery at Yogana (EI-21, in grid square S6E6), a site at the southern edge of Ejutla that Markman also visited during his study. He identified the site as a Monte Albán I hamlet. Although it is possible there was Early I occupation at some of the other sites he visited, most of his reported Monte Albán I ceramic diagnostics pertain to Late I. What Early I settlement there may have been in northern Miahuatlán was very sparse and dispersed, continuing the pattern found in Ejutla. Balkansky (2002) recorded only one small (less than 1 ha) Early I site in the Sola Valley west of Ejutla.

## Early I Public Architecture

During the Ejutla Valley survey, we noted Early I ceramics on 14 mounds at six sites (Table 5.5), with a total mound

TABLE 5.4. Monte Albán Early I population hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| Level | Population | No. of sites | Population | No. of sites |
| I | 5,250 | 1 | — | — |
| II | 578–1,112 | 2 | — | — |
| III | 210–301 | 7 | — | — |
| IV | 107–179 | 11 | — | — |
| No rank | 8–90 | 232 | 8–31 | 21 |

TABLE 5.5. Monte Albán Early I sites in the Ejutla Valley survey region.

| | Site no. and name | Grid square | Population | No. of mounds <1 m | No. of mounds ≥1 m | Mound volume ($m^3$) | No. of ceramic types | No. of cremas | Crema % of ceramic assemblage |
|---|---|---|---|---|---|---|---|---|---|
| 1 | EJ-EJ-CHI-1 | N3E6 | 8 | 0 | 0 | 0 | 2 | 0 | 0 |
| 2 | EJ-EJ-SMC-7 (Chichihualtepec) | N1E5 | 8 | 0 | 3 | 4,026 | 17 | 14 | 40 |
| 3 | EJ-LP-LP-2 | S1E5 | 30 | 0 | 0 | 0 | 4 | 0 | 0 |
| 4 | EJ-EJ-SMC-1 | N1E6 | 8 | 0 | 0 | 0 | 13 | 0 | 0 |
| 5 | EJ-EJ-SMC-1 | N1E6 | 8 | 0 | 0 | 0 | — | — | — |
| 6 | EJ-EJ-EV-28 | S1E6 | 15 | 0 | 0 | 0 | — | — | — |
| 7 | EJ-EJ-SJ-6 | S2E5 | 31 | 0 | 0 | 0 | — | — | — |
| 8 | EJ-EJ-SJ-10 | S2E6 | 19 | 0 | 5 | 1,647 | 2 | 0 | 0 |
| 9 | EJ-BSM-BSM-20 | S2E6 | 16 | 0 | 0 | 0 | 1 | 0 | 0 |
| 10 | EJ-EJ-EJ-1 (Ejutla) | S3E7 | 8 | 0 | 1 | 7,603 | 5 | 1 | 14 |
| 11 | EJ-EJ-EJ-1 (Ejutla) | S2E7 | 8 | 0 | 1 | 9,674 | 4 | 1 | 20 |
| 12 | EJ-EJ-SCN-19 | N1E4 | 8 | 0 | 0 | 0 | 2 | 0 | 0 |
| 13 | EJ-EJ-SCN-18 | N1E4 | 16 | 0 | 0 | 0 | 16 | 0 | 0 |
| 14 | EJ-LC-AE-8 | S2E5 | 8 | 0 | 0 | 0 | 2 | 0 | 0 |
| 15 | EJ-TAN-TAN-2 | S2E6 | 8 | 0 | 0 | 0 | 1 | 0 | 0 |
| 16 | EJ-LC-LL-1 | S3E5 | 11 | 0 | 0 | 0 | 4 | 0 | 0 |
| 17 | EJ-TAN-TAN-2 | S3E6 | 8 | 0 | 0 | 0 | — | — | — |
| 18 | EJ-EJ-SO-4 | S3E7 | 17 | 1 | 0 | 196 | 6 | 1 | 17 |
| 19 | EJ-EJ-EJ-42 | S3E7 | 8 | 0 | 0 | 0 | 3 | 0 | 0 |
| 20 | EJ-SAA-SAA-15 (Amatengo) | S4E5 | 8 | 0 | 3 | 7,128 | 4 | 0 | 0 |
| 21 | EJ-YO-YO-12 (Yogana) | S6E6 | 8 | 0 | 0 | 0 | 6 | 2 | 22 |

volume of approximately 30,000 $m^3$. No site was single component. All the mounds were associated with denser concentrations of surface pottery from later phases, and in a few instances, collections from mound fill showed the features to date later than Early I. Yet we cannot rule out that mound construction may have begun during Early I at several of the sites.

Only two of the six Early I sites with mounds had pre–Monte Albán occupation. Early I ceramics were noted on all three mounds at multicomponent Chichihualtepec (EI-2; Fig. 4.8; Appendix IX, Fig. 23). The isolated mound at this site may have been constructed during the Early Formative; it is possible the two-mound group was constructed in Early I. As we noted in the previous chapter, this site reached its greatest extent later in Late I and Monte Albán II, yet the long history of this site would seem to indicate that it had some early importance and possibly some early public buildings. Of the 10 structures at Amatengo (EI-20; Appendix IX, Fig. 33), Early I ceramics were noted on only one platform and two associated structures, adjacent to but not on the structure with Early Formative ceramics. That part of the site was occupied from Early I through Monte Albán IV. The major construction at the site, which reached its greatest extent in Monte Albán II/IIIA, occurred after Early I.

The large pre-Hispanic site situated beneath and adjacent to the modern district head town, Ejutla de Crespo (EJ-EJ-EJ-1), was difficult to map completely because of modern use and disturbance. We recorded and mapped 12 large structures, several of which stood 10–12 m high at the time of the survey (three were too destroyed to obtain accurate measurements). On two of the mounds at the Ejutla site (site components EI-10 and EI-11; Appendix IX, Fig. 6), we did record sparse Early I ceramics in addition to later ceramics. These two mounds are more than 400 m apart, and we did not find any Early I ceramics on the surface between them (so we assigned them separate Early I component numbers). One of the mounds (EI-11) is part of the architectural complex that sits at the center of the modern town, and the other one (EI-10) is located at the edge of town, some distance away.

The poor condition of the mounds in the center of town permitted us to examine the fill of many of the structures. Once examined, these collections indicate a Monte Albán II date of construction for most of the mounds. Yet we cannot entirely rule out the possible presence of mounded structures at the site during Early I. The massive Monte Albán II construction easily could have obliterated earlier architectural building. Modern building and occupation also has decimated the remnants of the ancient site.

Other pre-Hispanic structures at the site could not be mapped. One mound on the northern edge of town is visible only in an early black-and-white photograph. The mound was totally leveled during the construction of a new school prior to the implementation of our survey, and we found no surface evidence of it. The large church across from the town's main plaza is built on top of a pre-Hispanic platform, but the entire area is built up and paved over, so we could not determine its size or periods of occupation. An added complication is the site's location on a low bedrock rise that sits directly above a large patch of good alluvial land, a typical location for early (Formative period) sites. Several of these rises in town clearly are natural. So, although we did not define indisputable Early I architecture at the Ejutla site, given these conditions and the location of the Early I potsherds on the surface, we do

TABLE 5.6. Monte Albán Early I mound hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| Level | Mounds | No. of sites | Mounds | No. of sites |
| I | ? | 1 | — | — |
| II | 10–14 | 4 | — | — |
| III | 5–7 | 12 | — | — |
| IV | 2–4 | 35 | 3–5 | 3 |
| No rank | 0–1 | 201 | 0–1 | 18 |

consider it possible if not likely that some mounded construction was erected at the site at this time (the two components [EI-10/EI-11] are combined as one locality with two mounds in Fig. 5.3).

EJ-EJ-SJ-10 (EI-8; Appendix IX, Fig. 21), northwest of the Ejutla site, was occupied from Early I through Monte Albán II, and ceramics from all three phases are present on the platform and all four structures at the site. This site was considerably larger in Late I than in the other two phases, so the structures may pertain to Late I. Another small site, EJ-EJ-SO-4 (EI-18), was occupied in Early I and Late I and had only one small low mound, less than 1 m high.

Three of the sites with possible Early I architecture (Chichihualtepec, EJ-EJ-SJ-10, and Amatengo) share certain similarities with several sites in Oaxaca that have definite Early I architecture. Like Huixtepec (in the Valle Grande) and Mazaltepec (near the valley edge in western Etla; Fig. 5.3; Kowalewski et al., 1989, p. 105), these sites have from three to five low mounds in relatively open or loosely organized configurations. These sites have low estimated populations relative to their number of mounds. The two Valley of Oaxaca sites are considered border sites that may have served special functions because of their location near the physiographic edges of the region (Kowalewski et al., 1989, p. 106). The Ejutla sites with architecture may have served similar functions.

Even if we consider that small groups of mounds may have been constructed at four sites in Early I, the estimated populations for these sites were so low (all 19 or fewer people) as to rule out significant distinctions in political functions. Even though the same problem of affixing the phase of construction to mounds (with Early I surface pottery) exists for the Valley of Oaxaca, settlement size distinctions as well as excavated data from several sites, including Monte Albán, indicate a much more developed settlement hierarchy. With the establishment of Monte Albán, there were three or four tiers of civic-ceremonial sites (settlements with more than one mound) (Table 5.6; Kowalewski et al., 1989, p. 105). Monte Albán, in the center of the valley, was in a tier by itself (Rank I). The four sites in the second tier had between 10 and 14 mounds. At least one Rank II site is situated in each of the three valley arms. The remaining mounded sites in the Oaxaca hierarchy (Ranks III and IV) have two to seven mounds each. The mounded sites in Ejutla, if securely dated to that time/phase, would fit into this lower tier.

## Regional Integration in Early I

Small sites with mounds were well dispersed across the Valley of Oaxaca in Early I (Fig. 5.3), erasing the Rosario

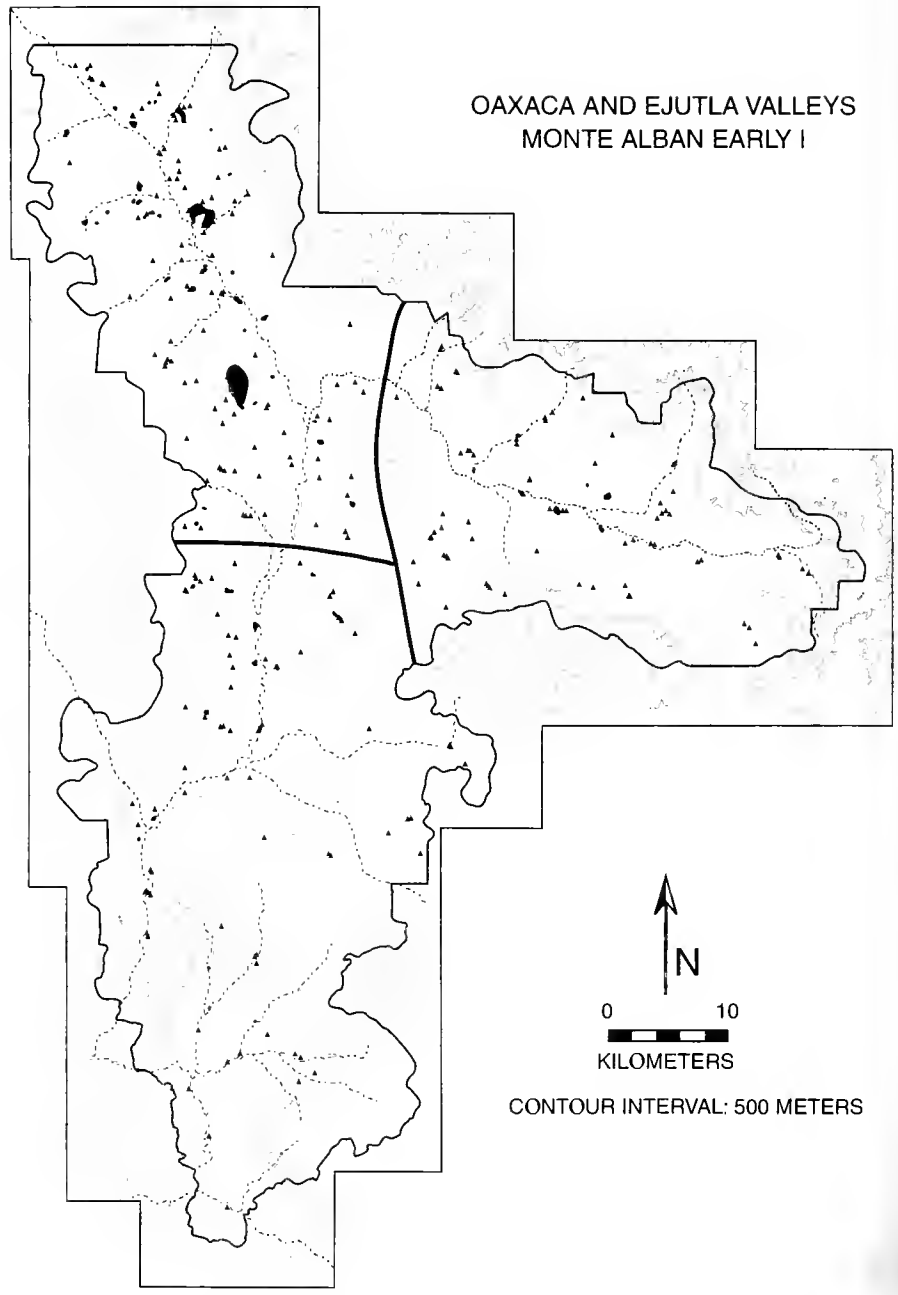



FIG. 5.7. Monte Albán Early I settlement clusters in Ejutla and the Valley of Oaxaca.

phase shatter zones so that no settlement breaks existed between Etla, Central, and northern Valle Grande. Tlacolula and Ocotlán (south of Tilcajete), however, still were separated to some degree from the core area surrounding Monte Albán (Kowalewski et al., 1989, p. 107). Based on Early I settlement patterns and the distribution of possible mound centers, there were three regional settlement clusters in the Valley of Oaxaca, each corresponding to one of the three valley arms (Fig. 5.7). The relationship between the three clusters is not clear, yet they do not appear to have been completely autonomous of each other. Monte Albán was at the center of an expanded cluster that originally centered on San José Mogote during the Rosario phase. This cluster continued to have the highest population in the combined Oaxaca/Ejutla region (approximately 10,500). The settlement hierarchy in this cluster was very primate, with over half the population residing in Monte Albán.

The other two clusters, in the Valle Grande and Tlacolula, were much smaller, each with a total population of approximately 2,000. Settlements and small mound centers were more dispersed there, especially in southern Valle Grande. The most remote communities include Tlapacoyan and two small centers in the Ocotlán subarea (Fig. 5.3). All are relatively distant from their nearest neighbors compared to other centers in Oaxaca. All are within 9–10 km of the nearest center, with second nearest-neighbor distances of 14–17 km to other centers in Oaxaca. Tlapacoyan's second nearest-neighbor is one of the sites in Ejutla with mounds, at a distance of 10.5 km. The small mounded sites

in Ejutla largely continue this pattern to the south, with first nearest-neighbor distances (to other centers) of 8–10 km (4 km if we include the two components of the Ejutla site as a one possible mound center) and second nearest-neighbor distances of 10–17 km. Settlement in the Ejutla Valley appears to have been an extension of the frontier region in the southern part of the Valley of Oaxaca and, like southern Ocotlán (Kowalewski et al., 1989, p. 108), was only loosely tied to central Oaxaca.

Settlements in the Ejutla Valley do not form one discrete cluster (Fig. 5.5). Whereas three-quarters of all sites in the Valley of Oaxaca were within 1 km of a contemporaneous site (Kowalewski et al., 1989, p. 92), in Ejutla only one-third were within that distance. The Ejutla communities are an extension of dispersed settlement in southern Valle Grande, which in turn is peripheral to Tilcajete and settlements in northern Valle Grande. Although changing settlement patterns in northern Ejutla hint at increasing interaction with Ocotlán, the major link between Ejutla and Oaxaca continued to be Tlapacoyan, in the southern tip of the Valle Grande, to the west. Most settlements in the Ejutla Valley, including the largest sites, were in the central and northern part of the region, closer to Tlapacoyan than to sites in Ocotlán. The few scattered settlements in southern Ejutla formed the southernmost frontier, much like the northern sites in Ejutla had done during the Early and Middle Formative. Thus, with the rapid expansion of population and settlement nucleation at the center of the Valley of Oaxaca, sparsely settled areas nearer the edges of the valley also experienced some demographic growth albeit at a markedly slower tempo. Some households evidently budded off from earlier communities and colonized new plots of arable land, basically reproducing and extending a settlement pattern made up of mostly small hamlets that often were positioned in remote clusters of a few communities.

## Early I Ceramics

To examine the nature of interaction between Oaxaca and Ejutla during Monte Albán Early I, we rely on two sets of analyses of surface-collected ceramics (Kowalewski et al., 1978; Blanton et al., 1982, pp. 375–382; Feinman, 1982; Kowalewski et al., 1989, pp. 825–837)—the number of ceramic types per site and the distribution of specific individual types, especially the distinctive cremas and "fangris" (a composite category that includes more than a dozen finely decorated gris, or gray ware, types). The inhabitants of Ejutla clearly participated in the Valley of Oaxaca ceramic tradition, yet there are distinct differences—in the density and the distribution of various ceramic types—between Ejutla and Oaxaca and also between northern and southern Ejutla that bear on the question of networks and integration across the two regions. The distinctive and often highly decorated crema ceramics were produced in the Etla and Central subregions of Oaxaca, near Monte Albán (Feinman, 1980; Joyce et al., 2006; Sherman et al., 2011), and few of those varieties made their way to settlements in Ejutla. Yet we did occasionally find other sherds that we call "false cremas," or local copies of crema wares. We categorized many of the cremas we recovered in Ejutla as false cremas in that they lacked the distinctive paste (compositional characteristics) of the cremas produced near Monte Albán, where the geology is distinctive in relation to the rest of the region (Joyce et al., 2006, p. 585). We have no evidence that these false cremas were produced anywhere in Ejutla; they may have reached Ejutla through Tlapacoyan, which also may not have been strongly tied to the Monte Albán polity in Early I, or they may have been made in several distinct localities. Highly decorated gray wares also were produced mostly (though not exclusively) near the center of the Valley of Oaxaca (Kowalewski et al., 1989, p. 94).

TABLE 5.7. Average number of ceramic types at Monte Albán Early I sites in Ejutla and Valley of Oaxaca subareas.

| | Types per site | Sites with mounds | Sites without mounds |
|---|---|---|---|
| Ejutla Valley | 5.4 | 7.8 | 5.0 |
| Oaxaca Valley | 9.1 | 15.9 | 7.3 |
| Etla | 12.7 | 17.6 | 10.5 |
| Central | 7.6 | 53.0 | 4.7 |
| Central (without Monte Albán) | 5.2 | 21.0 | 4.7 |
| Valle Grande | 7.5 | 11.4 | 6.4 |
| Ocotlán | 5.9 | 6.5 | 5.7 |
| Tlacolula | 9.0 | 13.4 | 7.8 |

### Early I Ceramic Types per Site

In the Valley of Oaxaca, there was noticeably greater differentiation in access to pottery during Monte Albán I than there had been earlier in the Rosario phase, with the degree of access to a diversity of ceramic forms and decorated types varying according to placement within the site hierarchy (Kowalewski et al., 1989, p. 107). Not surprisingly, then, Early I sites in Ejutla had lower access to a broad range of pottery products than did sites in Oaxaca. The 17 Early I settlements in Ejutla for which we have ceramic collections average three fewer ceramic types than contemporaneous sites in Oaxaca (Table 5.7). The overall average for the Ejutla Valley is lower than for Valley of Oaxaca sites without mounds, and even the average number of ceramic types (7.8) at the four possible mound sites in Ejutla was only marginally higher than the average for sites in Oaxaca that lacked mounds (7.3).

There is considerable variation in the average number of ceramic types per site among Oaxaca subareas (Table. 5.7). The mean number for Ejutla is most similar to Ocotlán. Ceramic diversity may be low in those two subareas because of their distance from production loci and more active exchange networks at the core of the Monte Albán system. The average number of types per site at rural sites in the Central subarea also is comparable to Ejutla, although the reason behind those low numbers may be a eonsequence of heavy demands placed on the occupants of those communities by powerful groups/leaders at Monte Albán. High ceramic diversity in Etla may reflect its close proximity to production sites where a range of ceramic varieties was made.

Patterns of access are variable between sites with and without mounds in different parts of the valley. In the core (Etla and Central), sites with mounds have the highest numbers of ceramic types, while sites with mounds in peripheral areas (Ejutla and Ocotlán but not Tlacolula) have the fewest. Excluding Monte Albán, sites with mounds in the Central subarea still have the highest average number of ceramic types. In contrast, sites without mounds in Etla have the highest ceramic diversity, whereas sites lacking mounds in the Central subarea have the lowest, even fewer ceramic types than similar sites in Ejutla and Ocotlán. Differentials in access

to ceramics for sites with and without mounds also were lowest in Ocotlán and Ejutla, whereas they were greatest in the Central subarea. These patterns highlight a significant difference in access to ceramic variety in the core versus more peripheral areas (see also Kowalewski, 2003b). The overall low ceramic diversity at all sites in more peripheral areas reflects their distance from Monte Albán and the loci of production. In the core, however, only the residents of the sites with mounded architecture enjoyed greater access to a variety of pottery, while people living at smaller sites were not much better off than those living in more peripheral areas.

Within the Ejutla region, fewer ceramic types were present with increasing distance from Monte Albán. Sites in northern Ejutla have greater densities of Early I sherds per collected area (25/ha in northern Ejutla and 14/ha in southern Ejutla) as well as three times as many ceramic types as sites in southern Ejutla (10 vs. 3.5). The three sites in Ejutla with the greatest range of ceramic types (13–17) are all small (less than 1 ha) and are all located in northern Ejutla (Table 5.5), indicating that distance from networks of exchange that centered on Monte Albán was an important factor affecting access to a diversity of ceramic wares. These sites, regardless of size, had greater interaction with populations and exchange networks in the Valley of Oaxaca than did sites located farther south. In Early I, the correlation between site population and types per site was slightly negative ($r = -.037$). In all subsequent phases, this relationship was positive (albeit to differing degrees). Thus, in Early I Ejutla, site location (proximity to the Valley of Oaxaca and Monte Albán) was a greater factor than even site size in regard to access to ceramic goods, thereby conforming to the perception that the Ejutla region was still more of a frontier than a dependent periphery at that time.

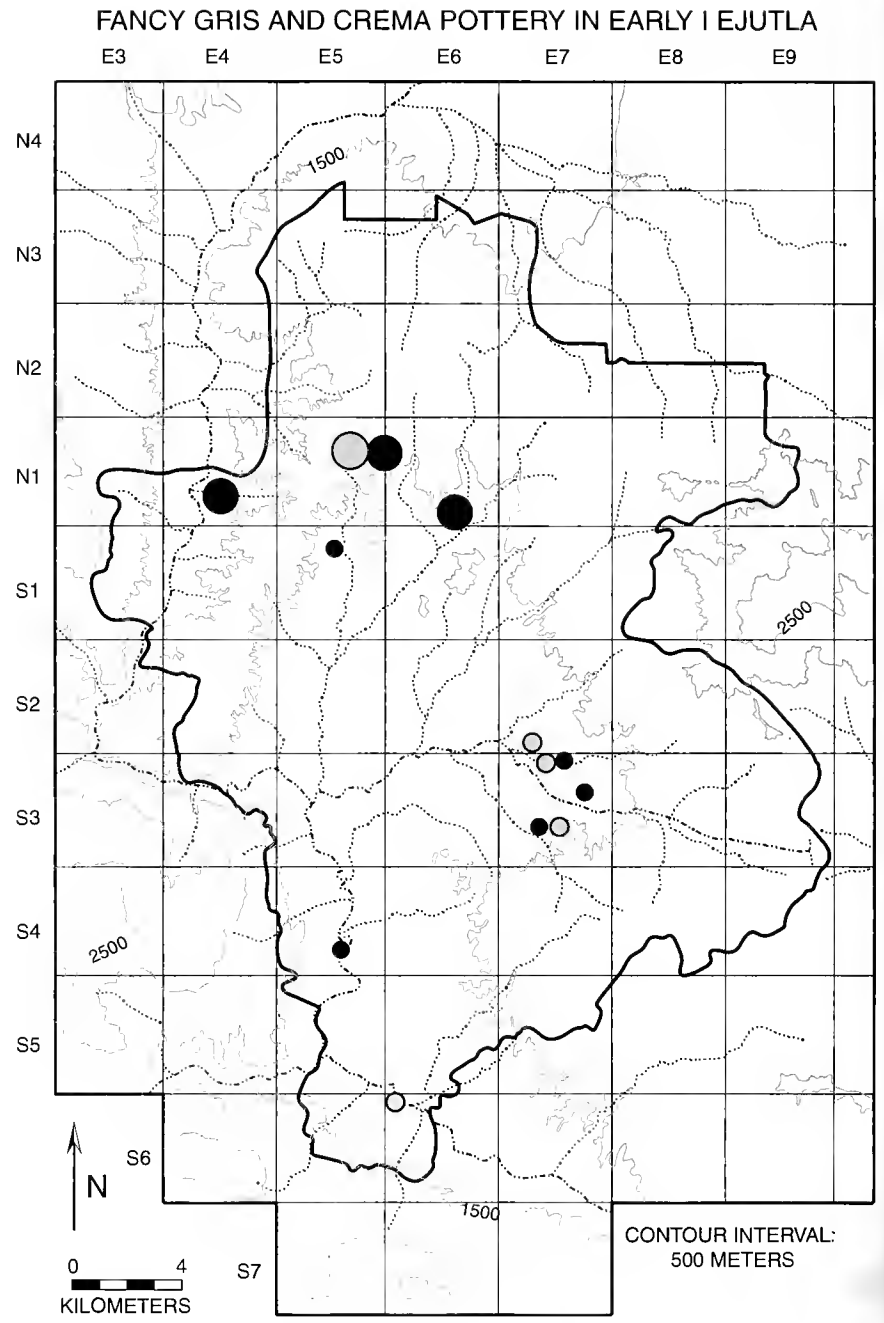



FIG. 5.8. Distribution of fancy gris/crema pottery in Ejutla in Early I.

## Early I Ceramic Distributions

Crema pottery was rare at Monte Albán I sites in Ejutla, and there were few cremas that were collected at those sites that unambiguously could be dated to Early I. We recorded cremas (decorated and undecorated) at only 5 of 17 Early I sites where we made collections. And only one site, in northern Ejutla, had more than one or two crema sherds (Fig. 5.8). Cremas account for about 5.8% of the diagnostic Early I sherds in the Ejutla region, compared to 12.5% of surface ceramics in regional survey collections at Tilcajete (Kowalewski et al., 1989, app. VI) and 9% from excavated contexts at Tilcajete (Spencer et al., 2008, p. 333). This pattern reflects the decreasing abundance of crema pottery with increasing distance from Etla/Central (Kowalewski et al., 1989, p. 94). The density of cremas in Ejutla is very similar to southern Valle Grande and eastern Tlacolula.

Although fancy decorated gris ceramics ("fangris") are more evenly distributed across the Valley of Oaxaca than cremas or cafés (brown-paste pottery), they are most prevalent at Monte Albán and in Tlacolula, with the fewest recorded in the Valle Grande and Ocotlán (Kowalewski et al., 1989, p. 95, fig. 5.2). There are fewer in southern Valle Grande than in northern Valle Grande, and the number in Ejutla is comparable to that of southern Valle Grande. In line with the pattern for cremas, fangris also are more abundant at sites in northern Ejutla than in sites to the south (Fig. 5.8). The three sites with by far the most fangris are clustered together in the north. Contrary to the pattern for Oaxaca (Kowalewski et al., 1989, pp. 95–96), fangris sherds in Ejutla are not more frequent at sites with mounds. In Ejutla, access to these fancier ceramic types is not related to site size, presence of mounds, or status; instead, distance from the Valley of Oaxaca core was the more important factor.

Monte Albán I café pottery is more evenly distributed across the Ejutla region. Even though we collected more café sherds in the north, they form a larger percentage of the total assemblage in the south (41% of in the south and 31% in the north). The distribution is most similar to that of the Valle Grande. The two types—thin (T2052) and thick (T2079) outleaned bowls—that are the most common in Etla, the Valle Grande, and Ejutla are not common in Tlacolula. These patterns would appear to reflect both production loci and the different exchange networks that circulated goods across the region. We have no definitive evidence of Early I pottery production in the Ejutla Valley. Yet we suspect that if households in Ejutla made pottery, it more than likely would have been café, as the composition of the false cremas most resembles café pottery. Some café vessels may have been made in southern Valle Grande (Kowalewski et al., 1989, p. 94), and that also may help account for their abundance in Ejutla, whereas cremas and gris varieties were crafted closer to Monte Albán.

TABLE 5.8. Estimated archaeological, resource-based, and average labor-based potential populations for Ejutla and Valley of Oaxaca subregions in the Monte Albán I.

| | Ejutla | Etla | Central | Northern Valle Grande | Southern Valle Grande | Western Tlacolula | Eastern Tlacolula |
|---|---|---|---|---|---|---|---|
| Early I | | | | | | | |
| Estimated archaeological population | 259 | 3,175 | 6,793 | 1,999 | 529 | 1,815 | 341 |
| Resource-based potential population* | 39,900 | 47,600 | 21,700 | 47,300 | 41,700 | 36,900 | 16,900 |
| Average labor-based potential population** | 525 | 7,300 | 3,400 | 4,100 | 1,200 | 2,700 | 600 |
| Late I | | | | | | | |
| Estimated archaeological population | 3,455 | 10,619 | 22,843 | 8,583 | 2,633 | 4,344 | 2,317 |
| Resource-based potential population* | 51,100 | 57,600 | 27,200 | 57,300 | 49,600 | 46,700 | 22,100 |
| Average labor-based potential population** | 7,000 | 21,300 | 12,600 | 17,600 | 6,000 | 8,100 | 3,800 |

* Based on full exploitation of all agricultural land resources in each subregion.

** Based on available labor supply and equal use of Class I and II land near recorded settlements.

### Early I Ceramic Summary

Considering the ceramic and settlement data together, we conclude that there was little if any supracommunity political or hierarchical development in Ejutla during Early I. The two largest sites—EJ-LP-LP-2 (EI-3) and EJ-EJ-SJ-6 (EI-7)—have estimated populations of only 30 people, and they are not centrally located relative to most Ejutla Valley communities. Four sites might have had architecture, three in the western half of the settled area—Chichihualtepec (EI-2), EJ-EJ-SJ-10 (EI-8), and Amatengo (EI-20)—and the Ejutla site (EI-10/EI-11) in the central Ejutla River valley, but all have small populations. There is no overlap between the two largest sites and the four sites with possible architecture. Three sites stand out in numbers of types per site—Chichihualtepec, EJ-EJ-SMC-1 (EI-4), and EJ-EJ-SCN-18 (EI-13)—but only one of those sites has any architecture. Chichihualtepec may have had one or more structures in Early I, but this is by no means definite. With so few indicators of hierarchy and so little overlap between these three indicators, hierarchical development was minimal in Ejutla, not unexpected for a sparsely inhabited frontier.

The three Ejutla sites with the greatest ceramic diversity are the same three that have the most cremas and fangris. All have small populations and are located in northern Ejutla. Only one site (Chichihualtepec) has lots of cremas and lots of fangris; it also is the only one of the three with possible Early I architecture. Even though in general we think that distance from Oaxaca was the most important factor determining ceramic distributions in the Ejutla Valley, Chichihualtepec may have been different from other sites in Ejutla at that time; it may have been connected more strongly to southern Valle Grande through its link to Tlapacoyan. That settlement, which was initially settled during the Early Formative (like Chichihualtepec), also had a small population. But architecturally, Tlapacoyan appears to have been a low-level civic-ceremonial center in Early I (Kowalewski et al., 1989, pp. 97–98). Chichihualtepec may have prospered through its closer proximity to Tlapacoyan.

In sum, based on settlement patterns and ceramic distributions, the Ejutla region remained a sparsely settled frontier that lacked any significant civic-ceremonial center at the time of Monte Albán's foundation. Most interactions between the Valley of Oaxaca and Ejutla were not handled through central places; rather, they were negotiated horizontally by households/individuals at small, relatively autonomous communities situated along this frontier.

## Human/Land Relationships in Early I

Populations in Oaxaca and Ejutla remained far below what land and water resources in either valley could have supported. With rapid demographic growth in the Valley of Oaxaca during Monte Albán I, the population there increased from 1% to almost 7% of the regional resource-based potential (Nicholas, 1989). In Ejutla, population remained below 1% of the regional potential, lower than for any Valley of Oaxaca subregion (Table 5.8). That population, however, was unevenly dispersed across the region, with the ratio of population relative to agricultural resources decreasing at greater distances from the core (this time Monte Albán). The population of the Central subregion grew to more than 30% of its resource-based potential, whereas in the three adjacent subregions—Etla, western Tlacolula, and northern Valle Grande—populations were closer to 5% of that resource-based figure. Population levels relative to agricultural resources were lowest for the margins of the valley, in eastern Tlacolula, southern Valle Grande, and Ejutla.

In the center of the Valley of Oaxaca, the foundation of Monte Albán led to new levels of population concentration in one place. This aggregation resulted in a scale of local population/resource imbalances that had not been present in the region before. Under our original assumption that limits the residents of each site to agricultural land in the grid square in which the settlement is located, population in the Central subregion was almost twice what the available labor force could have supported in an average-rainfall year (Nicholas, 1989, fig. 14.4). A relaxation of this modeling assumption, which would allow the excess population at Monte Albán to farm the immediately adjacent squares, would serve to bring the potential and estimated population levels of the Central subregion closer in line. Still, food imports would have been necessary in low-rainfall years. Populations were much lower relative to potential levels in all other subregions, including Ejutla (Table 5.8). Based on these computations, we suspect that occupants of other subregions may have provided varying amounts of surplus food for the residents of Monte Albán during both average-rainfall and dry years.

Based on our calculations, the greatest amount of extractable potential surplus would have come from Etla and northern Valle Grande (Fig. 5.9), areas that were included in the core settlement cluster centered on Monte Albán. The increased number of rural residents in the Central subregion also could have produced substantial surpluses to help provision the center, although Monte Albán's residents more than used up

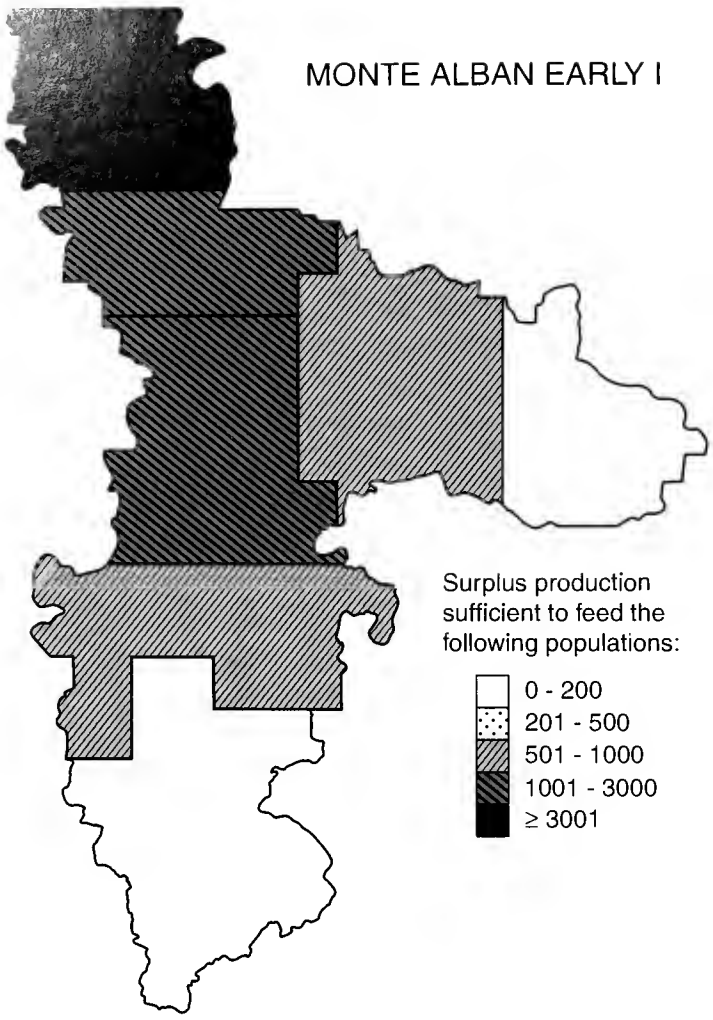



FIG. 5.9. Monte Albán Early I surplus in Ejutla and Valley of Oaxaca subregions (based on rural producers, Central area does not include Monte Albán's population).

whatever surplus was produced in its immediate hinterland. The potential surpluses from Etla and northern Valle Grande were more than enough to provision Monte Albán in average-rainfall years. The lowest levels of surplus, if any, would have come from the margins of the valleys (Ejutla and eastern Tlacolula), in large part because of the low populations residing in those areas.

Ejutleño farmers could have grown more food in average-rainfall years than they required for their own provisions. At the scale of the region, potential production also would have been sufficient in dry years, even though the residents of two grid squares (S6E6 and S2E5) may have experienced crop shortfalls. Both squares have small patches of Class II land and lots of Class III land, but no Class I land. Even with low consumption, harvests may have been insufficient in those areas in some years. Wild food resources would have provided sufficient additional food for the affected settlements. Participation in exchange networks and the hoarding of excess maize kernels during higher-rainfall years when harvests were more plentiful also were potential options. If the residents of those small settlements experienced subsistence stress, they had the opportunity to move to new locations closer to more productive farmland, as population was so low across the Ejutla region.

## Early I Conclusion

The Ejutla region clearly was part of the Valley of Oaxaca interaction or cultural sphere during Monte Albán Early I, but like other valley margins, it was much less affected by the initial establishment of the new capital at Monte Albán than were areas closer to that center. Communities in Ejutla do not seem to have been tightly integrated to (or interdependent with)

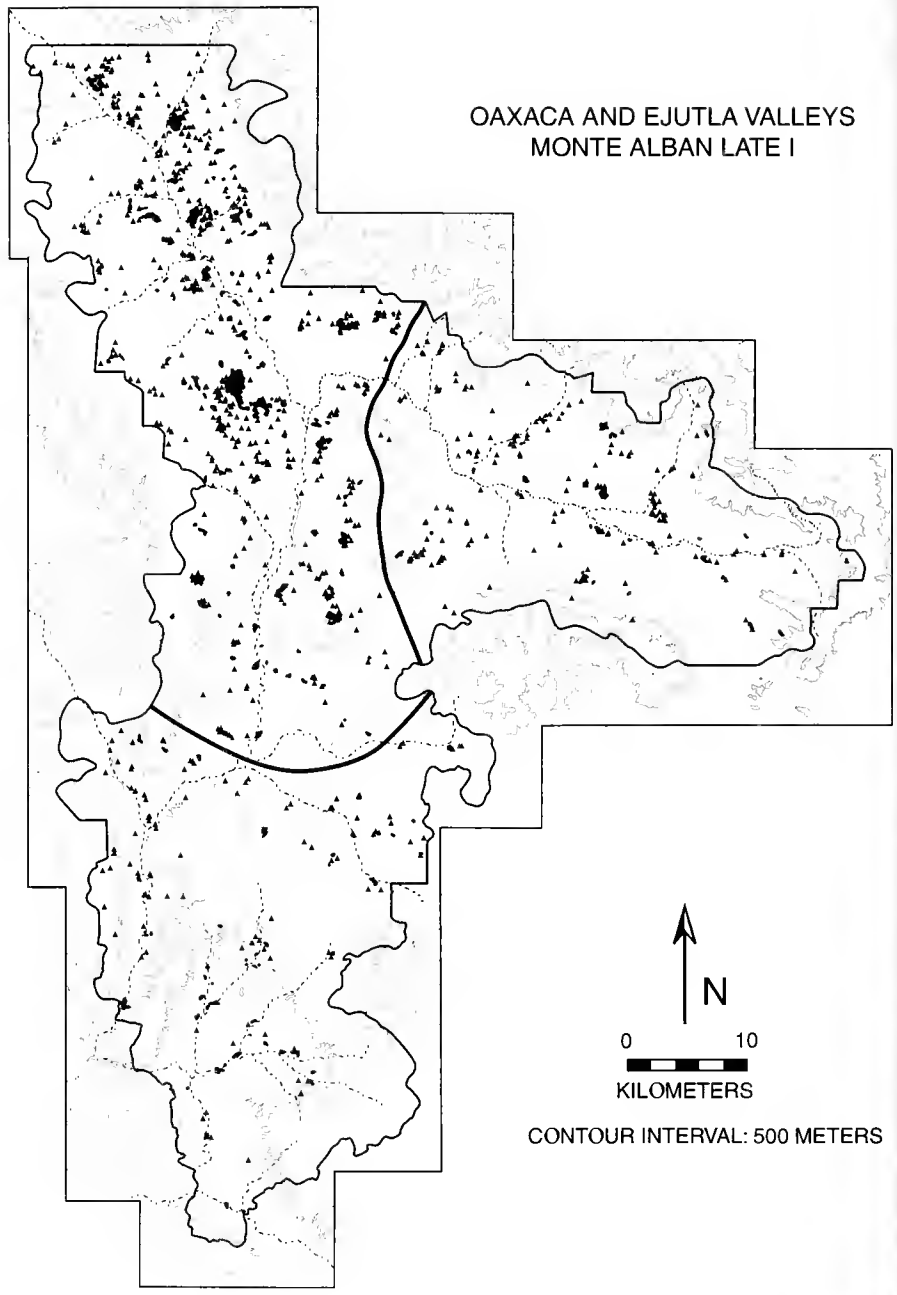



FIG. 5.10. Monte Albán Late I settlement clusters in Ejutla and the Valley of Oaxaca.

centers in the Valle Grande, although Tlapacoyan, near the Atoyac River in southern Valle Grande, was likely the community through which interaction with the Oaxaca Valley was carried out. The growing center of Tilcajete, in northern Valle Grande, does not appear to have had much influence on areas farther south. Like most of the Ocotlán subarea of the valley, the Ejutla Valley remained a poorly integrated frontier region, with little hierarchical development. The major factor in access to Valley of Oaxaca ceramics appears not to have been hierarchical relationships between communities; rather, it was proximity to networks of exchange, largely following the Atoyac River, and centers of production in the larger region to the north.

## Monte Albán Late I: Expansion of Monte Albán

Monte Albán greatly expanded in size and extended its political influence during the latter half of Monte Albán I (Late I; Table 1.1; Blanton et al., 1993, pp. 77–79). Demographic nucleation continued around the capital, and the relatively dense cluster of settlement associated with the hilltop center extended farther south into the Valle Grande (Fig. 5.10). Yet in spite of its unique size and monumentality, Monte Albán does not appear to have politically dominated or unified the entire Valley of Oaxaca immediately or even soon after its foundation. The hilltop center's relations with more

TABLE 5.9. Monte Albán Late I population hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| **Level** | **Population** | **No. of sites** | **Population** | **No. of sites** |
| I | 17,242 | 1 | — | — |
| II | 1,392–1,946 | 3 | — | — |
| III | 555–879 | 7 | — | — |
| IV | 233–496 | 24 | 271–330 | 3 |
| V | 102–221 | 41 | 122–228 | 8 |
| No rank | 8–98 | 558 | 8–96 | 48 |

outlying parts of the valley and beyond were more tenuous and fluctuating (Feinman, 2007); the degree and nature of connectivity varied with distance (M. L. Smith 2005, 2007).

Yet the filling in of previously unoccupied terrain in western Tlacolula during Late I indicates greater integration of the communities in that subregion than had been present earlier. During our subsequent survey of the Albarradas area in eastern Tlacolula, we documented major changes in settlement patterns between Early I and Late I that also evidenee the greater integration of Tlacolula's population into Monte Albán's political-economic orbit (Feinman & Nicholas, 1999). The mountain slopes in eastern Tlacolula were very sparsely settled in Early I, but in Late I a dozen new settlements were established in defensible locations. Most of these small sites (villages) were located to defend their perimeters from the east (exterior to the valley) and not from the west (the direction of Monte Albán). The eeramics recovered at these sites indicate they had close stylistic affiliations with Monte Albán and the Valley of Oaxaca. Balkansky (2002) and Redmond and Spencer (Spencer, 1982, 2007; Redmond, 1983; Redmond & Spencer, 2006) report similar patterns in the outlying Sola Valley and the Cañada de Cuicatlán. At the same time, competition with the expanding Monte Albán polity also may have been an important factor in settlement changes in the Mixteca Alta. Although the population of the Mixteca almost doubled, there was transition and disruption as many earlier settlements were abandoned at the same time that new communities, both small and large, were established, often in more defensible locations (Kowalewski et al., 2009, pp. 299–301).

During Late I, Monte Albán tripled in size, and population continued to increase rapidly throughout the Valley of Oaxaca, at a rate of 0.83% per annum. Although the valleywide pattern of population distribution was similar to what it had been in Early I, several significant changes are relevant to the discussion of Ejutla. As a whole, the Valley of Oaxaca settlement system was organized more hierarchically than ever before (Tables 5.9 and 5.10;

TABLE 5.10. Monte Albán Late I mound hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| **Level** | **Mounds** | **No. of sites** | **Mounds** | **No. of sites** |
| I | ? | 1 | — | — |
| II | 26–27 | 2 | — | — |
| III | 11–15 | 6 | 12 | 1 |
| IV | 5–10 | 31 | 7–8 | 2 |
| V | 2–4 | 46 | 2–5 | 5 |
| No rank | 0–1 | 548 | 0–1 | 51 |

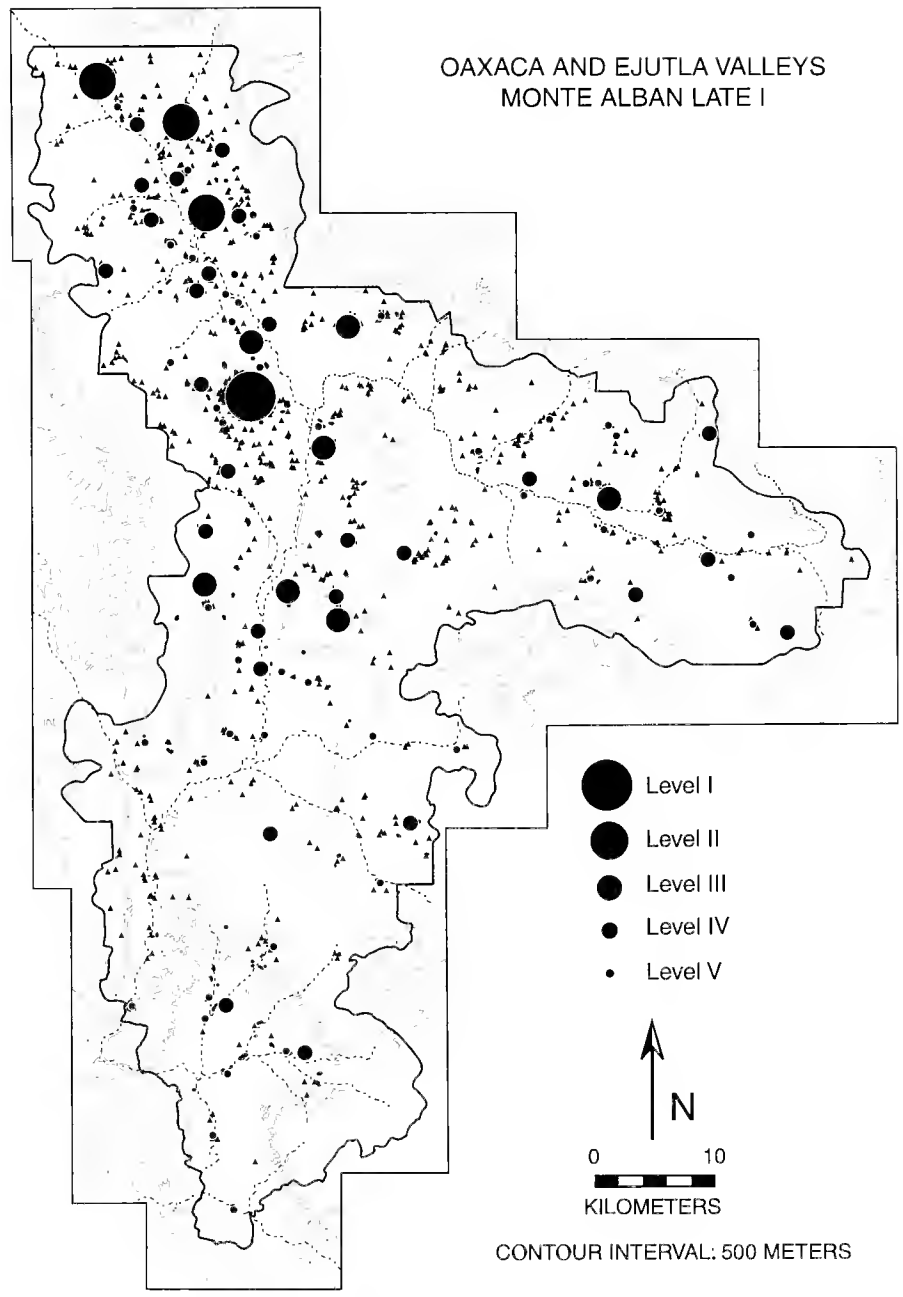



FIG. 5.11. Monte Albán Late I settlements in Ejutla and the Valley of Oaxaca, showing location of the largest centers.

Kowalewski et al., 1989, pp. 126–138). Graduated settlement classes (by population and number of mounds) were most clearly defined close to Monte Albán (Figs. 5.11 and 5.12). In Late I, however, these vertical arrangements extended farther south in the Valle Grande and to the east in Tlacolula (see also Kowalewski et al., 1989, figs. 5.6 and 6.5). In part, the growth of new population centers at considerable distances from Monte Albán accounts for the different pattern of Early I–Late I population change compared to the prior transition. Whereas demographic growth between Rosario and Early I was characterized by more rapid change close to Monte Albán, the rates of Early I–Late I growth were greatest toward the edges of the valley, in southern Valle Grande and eastern Tlacolula (Feinman et al., 1985, p. 346). The establishment and growth of new centers at the southern and eastern fringes of the Valley of Oaxaca was accompanied by the formation of many small communities around them.

Over several centuries, people who previously had lived in surrounding mountains and smaller valleys such as those in the Mixteca Alta (where intervalley competition likely resulted in demographic disruptions) may have opted to migrate to the Central Valleys of Oaxaca to take advantage of emergent regional exchange systems that could have ameliorated the seasonal as well as annual ecological uncertainties that have long afflicted maize farming and village life across Oaxaca (e.g., Kirkby, 1973; Flannery, 1983a; Nicholas, 1989). The rapid demographic growth evidenced in the Central Valleys of

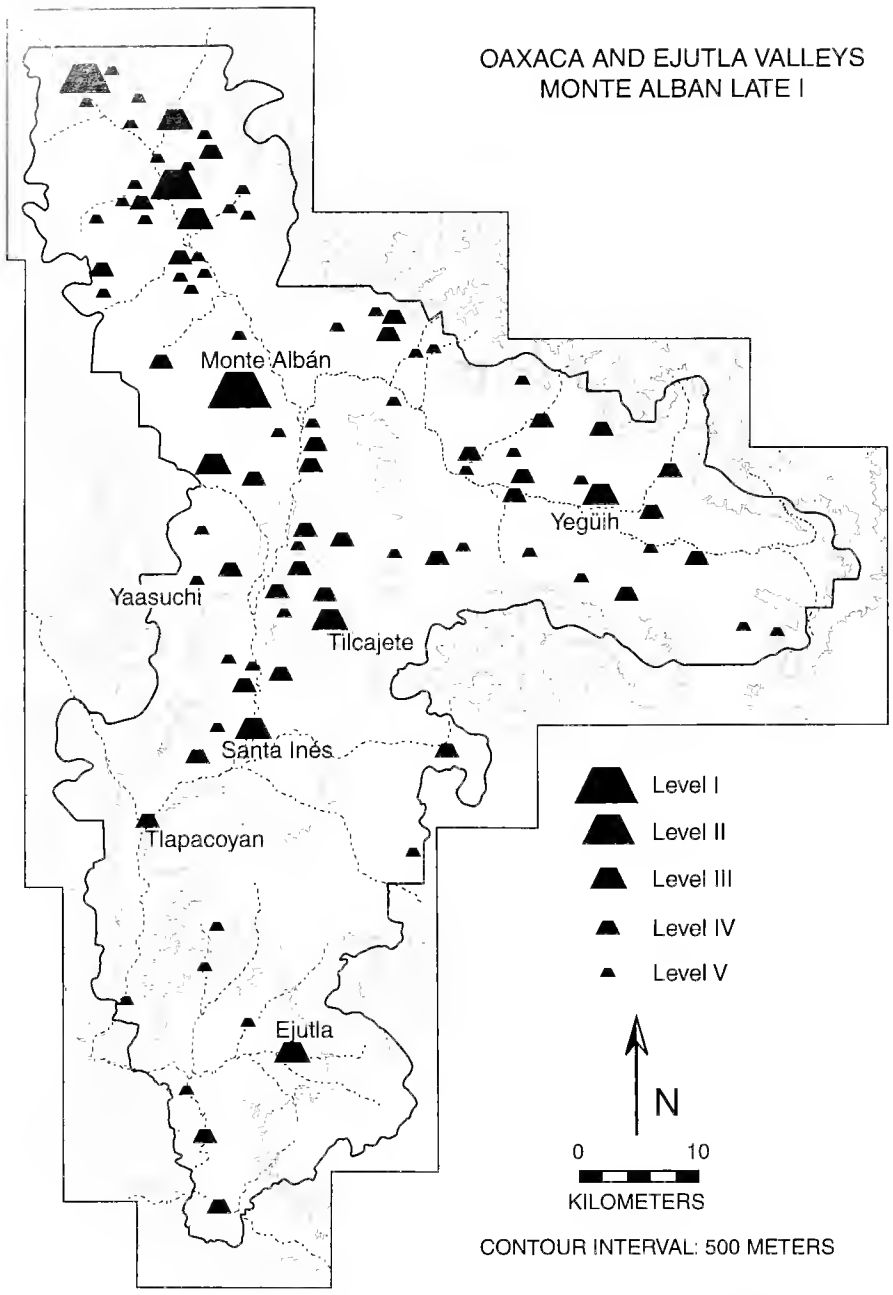



FIG. 5.12. Monte Albán Late I mound centers in Ejutla and the Valley of Oaxaca.

Oaxaca during Monte Albán I also indicates that migration (in search of eeonomic opportunity and security) likely was part of the suite of strategies followed by individuals and households in this region for millennia (and up to the present day).

Late I population increase in the Valley of Oaxaca was accompanied by episodes of major architectural construction and increased range/differentiation in site size and mound volume hierarchies. There were two rings of mounded sites around Monte Albán: an inner ring of sites that lack formal architectural groupings and an outer ring of sites with multiple mounded structures often associated with plazas (Kowalewski et al., 1989, p. 146). The outer ring included Santa Inés Yatzeche and Tilcajete (Fig. 5.12; Kowalewski et al., 1989, fig. 6.5), two mound centers that continued from Early I.

Tileajete again increased in size between Early I and Late I. Evidence of burning and building destruction at that center during Late I has been interpreted to indicate continued resistanee to Monte Albán's expansion (Spencer & Redmond, 2001a, 2003, 2004b; Spencer, 2003; Redmond & Spencer, 2006; Spencer et al., 2008). These findings of antagonism provide support for the interpretation that the entire valley was not peacefully unified under Monte Albán during the first 400 years of its existence and that some centers resisted the expansive Monte Albán polity. Tilcajete and other centers in the outer ring may have had more fluid (and sometimes antagonistic) relationships with the capital and may not have been fully integrated into the Monte Albán polity until the end of Late I. Intercommunity raiding within the bounds of a modern nation-state occurred in the Valley of Oaxaca well into the 20th century (e.g., Dennis, 1987).

The relationship between Tilcajete and Monte Albán may have been uneven, sometimes antagonistic, yet the two sites interaeted enough so that basic conventions in ceramic styles, architectural layouts, and burial customs were broadly shared. The dispersal of Late I cremas is a bit difficult to assess because so few crema ceramic varieties are diagnostic of only Late I. Even though the overall numbers were lower everywhere in the valley except at the capital, the spread of decorated cremas across the valley continued the Early I pattern, declining with distance from Monte Albán (Table 5.1). The drop in decorated cremas from excavated contexts at Tilcajete between Early I and Late I (Spencer & Redmond, 2003, table 2; Spencer et al., 2008, p. 333) follows this same trend and thus may not solely or mostly reflect increasingly antagonistic relations between Tilcajete and Monte Albán. The supposed presence of much greater quantities of Monte Albán Late I cremas at the contemporaneous but smaller site of Yaasuchi in northwestern Valle Grande (Fig. 5.12), in comparison to much lower quantities at Tileajete, has been offered as evidence of the latter site's resistance (Sherman, 2005; Elson & Sherman, 2007, p. 270). Yet on closer perusal, there are no definitively diagnostic Monte Albán I cremas in surface collections at Yaasuchi (Sherman, 2005, table 3.1). All the crema pottery from surface collections at Yaasuchi can be dated no more precisely than to Late I-Monte Albán II (Sherman, 2005, table 3.2). So, although these sherds may have dated as early as Late I, the specific pottery types listed in that table are generally considered to be much more abundant in Monte Albán II. In addition, there were slightly more Late I decorated cremas in surface collections from Tilcajete than for northern Valle Grande as a whole and almost three times as many as in southern Valle Grande (Kowalewski et al., 1989, app. IV). Consequently, it is not clear whether Tilcajete was receiving fewer cremas than other sites in the Valle Grande or what effect the site's resistance had on exchange elsewhere in the region.

Thus, although the Tilcajete site, with its sequence of centers (Redmond & Spencer, 2008, 2011; Spencer, 2009), does not appear to have been tightly integrated into Monte Albán' political domain, neither, in our view, were these Tilcajete localities the sequential capitals of an entirely autonomous polity that was a political equal to Monte Albán (cf. Speneer & Redmond, 2004a; Redmond & Spencer, 2008; Spencer, 2009). Given the relatively small size of Tilcajete, the seemingly lesser volume of monumental construction compared to Late I Monte Albán, and the lower population densities in the southern part of the valley compared to Monte Albán and its surrounding hinterland, we see the Tilcajete polity and its local elites as having more variable/unstable relations with the much more powerful center to the north (Monte Albán; Feinman, 2007; cf. Spencer & Redmond, 2003). In many regions of the world, the process of state building and expansion often has involved jockeying (the dialectic of control; Giddens 1984, pp. 14–16) between central and seeondary elites over taxes, tribute, the delivery of public goods, as well as perceived slights and real threats (see also Brumfiel, 1994; Kiser & Linton, 2002; Elson & Covey, 2006). We see no evidential reason to presume that the early polities in the Valley of Oaxaca had fixed, firm, or stable boundaries, and since we are

dealing with phases that often lasted for centuries, shifting and contested borders may have been more the rule than finite political divisions. Historically, boundaries of early states often were fluid, marked by uneven degrees and control over broad areas (Feinman, 1998; M. L. Smith, 2005, 2007).

Although population densities continued to be sparser across the Central Valleys of Oaxaca at greater distances from Monte Albán, significant expansion did occur in Ejutla and the neighboring Sola Valley (Balkansky, 2002). The first definite settlements in Miahuatlán date to Late I (Markman, 1981). We see the same processes at work in Sola as in Ejutla, with influence/exchange moving down the Atoyac River, through Tlapacoyan. Sola also was likely settled by migrants from the Valley of Oaxaca and mountainous surrounding regions. Although growth in the Ejutla Valley and areas farther south appears to have been affected by the political and economic developments at Monte Albán and the center of the Valley of Oaxaca, there remains no evidence that any of these outlying valleys were at this point in time fully incorporated into the Monte Albán polity (cf. Balkansky, 2002; Sherman et al., 2010).

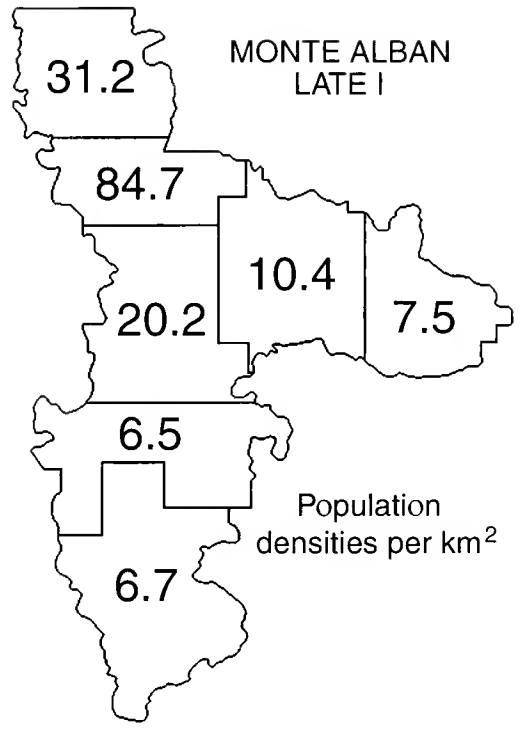



FIG. 5.13. Monte Albán Late I population densities in Ejutla and Valley of Oaxaca subregions.

## Late I Settlement in Ejutla

Population change in the Ejutla Valley between Early I and Late I continued to correspond more closely to shifts in eastern Tlacolula and southern Valle Grande than to the Valley of Oaxaca as a whole. Significantly, the tempo of estimated Early I–Late I demographic growth in Ejutla (1.73%) was more rapid than in any other subregion in Oaxaca. Although not without precedent for preindustrial contexts, this rate does substantially exceed the 0.6–0.7% annual growth that could have been maintained by natural increase alone (excess fertility over mortality; Cowgill, 1975; Hassan, 1981). In-migration seems a probable contributor to growth in Ejutla, although it is rather unlikely that all the migrants came from the Valley of Oaxaca, since the pace of Early I–Late I growth was rapid there as well. Perhaps the rise of political institutions (that could offer greater degrees of security) and the maintenance of local exchange networks across the Valley of Oaxaca system provided buffering and protection mechanisms that promoted the economic opportunities and advantages of agricultural village life in the Central Valleys of Oaxaca.

With the more rapid tempo of population growth in Ejutla than the Valley of Oaxaca during Late I, demographic and settlement patterns in the Ejutla Valley became more similar to parts of the larger valley than in any earlier phase. Although considerably lower than for Oaxaca as a whole (Table 5.2), for the first time, in Late I, population density in Ejutla was comparable to densities in eastern Tlacolula and southern Valle Grande (Fig. 5.13).

Another significant change in the Ejutla Valley between Early I and Late I was an increase in site size relative to Valley of Oaxaca sites. In Early I, average site size in Ejutla was smaller (often substantially) than for any Valley of Oaxaca subregion. In contrast, in Late I, average site size in Ejutla was larger than elsewhere in the Valley of Oaxaca, including the Central area (when Monte Albán is excluded from the calculation; Table 5.11). On average, Late I sites in the Ejutla region were twice the size of settlements in eastern Tlacolula and southern Valle Grande.

A related shift between Early I and Late I concerns the proportion of sites in three broad size categories. For the Valley of Oaxaca, even though the number of sites almost tripled from Early I to Late I, the proportion of sites in these three categories (Table 5.12) was comparable for both phases. For Ejutla, however, the proportions changed considerably. The Late I pattern in Ejutla was more similar to Oaxaca. In concert with the dramatic increase in the number of sites from Early to Late I, the proportion of sites in the smallest category decreased almost by half for Ejutla. In addition, even though there were more very large sites in Oaxaca (there were none in Ejutla), the proportion of Ejutla Valley sites with populations over 100 was almost twice that for Oaxaca. As the Ejutla region and its settlements were drawn loosely into the economic orbit of Monte Albán by Late I, households at the valley system's edge in Ejutla may have aggregated in larger communities (no longer living principally in isolated hamlets) to reap certain economic and defensive advantages. As we saw with Tilcajete, Monte Albán's attempt to exploit or incorporate larger areas of the valley at times may have been met with antagonism and resistance. The percentage of really small settlements in Ejutla during Late I was lower than for any other phase, perhaps reflecting these defensive and security issues for isolated households and small hamlets.

TABLE 5.11. Number of sites, occupied area, and average site size for Ejutla and Valley of Oaxaca subregions in Monte Albán Late I.

| | No. of sites* | Occupied area (ha) | Average site size (ha) |
|---|---|---|---|
| Etla | 150 | 525.0 | 3.5 |
| Central | 119 | 828.9 | 7.0 |
| Central without Monte Albán | 118 | 284.0 | 2.4 |
| Northern Valle Grande | 145 | 482.4 | 3.3 |
| Southern Valle Grande | 75 | 127.8 | 1.7 |
| Western Tlacolula | 100 | 216.8 | 2.2 |
| Eastern Tlacolula | 45 | 86.1 | 1.9 |
| Ejutla | 59 | 211.7 | 3.6 |

* Combined sites.

TABLE 5.12. Percent of sites in three size categories in Ejutla and Oaxaca in Monte Albán I.

| Phase | Valley | ≤8 | 9–99 | ≥100 |
|---|---|---|---|---|
| Early I | Ejutla | 62 | 38 | 0 |
| Early I | Oaxaca | 30 | 61 | 9 |
| Late I | Ejutla | 36 | 46 | 17 |
| Late I | Oaxaca | 35 | 55 | 10 |

Most Late I settlements in Ejutla are located in low piedmont settings within 100 m of a watercourse and continue the pattern of relatively dispersed settlements also found in southern Valle Grande. The number of communities along the drainage boundary in northern Ejutla and at the southern edge of the Valle Grande increased. Areas in north-central and central Ejutla continued to be somewhat more densely settled in Late I, accounting for over half the Late I population. Yet the major focus of new settlement in Ejutla was to the south, principally along the Ejutla River and its major tributaries in the Ejutla Valley (Fig. 5.14). Population also increased in other subareas of Ejutla so that the Late I population, including the region's largest sites, was more evenly dispersed across the entire valley.

The 10-fold increase in Ejutla's population did coincide with the emergence of greater variation in settlement size and architectural complexity. Although the Late I population density in the Ejutla Valley was roughly equivalent to the Early I density in the Valley of Oaxaca, no Late I Ejutla settlement was as large as Early I Monte Albán, pre–Monte Albán San José Mogote, or even the larger Late I secondary centers in the Valley of Oaxaca. Almost 20% of the Late I sites in Ejutla had estimated mean populations greater than 100 m, yet none had more than 350 people.

The largest Late I site in the Ejutla survey region, EJ-EJ-CHI-1 (LI-2, in grid square N3E6), is situated near the survey border with Ocotlán, as are several other small sites in grid squares N2E8 and N2E9. These sites, which were separated from the rest of the Ejutla population by a broad 6–7-km area with no settlements, likely were part of a dispersed cluster of occupation in southern Ocotlán. The rest of the largest sites in Ejutla are fairly evenly spaced across the region, about 4–6 km apart, including Yogana (LI-61, in grid square S6E6) at the southern end, on the Miahuatlán River near its confluence with the Atoyac. This area is technically part of the Miahuatlán drainage, but it is closer to other sites in Ejutla than to any known sites in Miahuatlán (Markman, 1981, fig. 3-2). The site at Yogana is located on a defendable promontory above the river, in an area of piedmont slopes with sparse population (today and in the past), and likely had boundary functions throughout its occupation.

Ejutla settlements can be divided into northern and southern clusters, each accounting for approximately half the population (53% north, 47% south). The northern cluster is focused on the northern tributaries of the Ejutla River. The southern cluster is centered along the Ejutla River. Each is loosely centered on one of the two next largest sites, EJ-LP-LG-1 (LI-20, in grid square S1E5) and the Ejutla site (LI-37, in grid square S2E7). Of the eight other sites with more than 100 people, four are in each cluster (Fig. 5.15).

Similar but even more dispersed settlement patterns for Late I have been recorded in Sola and Miahuatlán. Population changes in the Sola Valley between Early I and Late I mirror those in Ejutla. As significant numbers of people moved to Sola, the number of settlements increased from one to 19 (Balkansky, 2002, pp. 37–40). Similar to Ejutla, no one site was dominant, but four settlements were much larger than the others and all were within the size range of the largest sites in Ejutla. These large sites were situated around the circumference of the valley, possibly for defensive concerns. All other sites in Sola were much smaller.

Markman (1981) also recorded 14 Monte Albán I (most likely Late I) sites during his transect survey of the Miahuátlan Valley, mostly in the upper alluvium and river bottomlands near the modern town of Miahuatlán. The largest site, with an estimated population of 250 (Markman, 1980), was of comparable size to the largest sites in Ejutla and Sola. No other settlements there had estimated populations larger than 100 people. Fewer settlements were recorded in southern Ejutla and northern Miahuatlán. With the caveat that the Miahuatlán sites are only a sample of settlement in the region, there appears to be some similarity to settlement patterns in Ejutla, although Miahuatlán likely was even more of a frontier than Ejutla and even less closely linked politically with Monte Albán.

## Late I Public Architecture

Sixteen Late I sites in Ejutla are associated with at least one mound (Table 5.13). Most of these sites had no more than four structures, and the mounds were usually small. Later, more extensive occupational episodes were present at each of the sites where Late I ceramics were associated with more than four structures or with more than 5,000 $m^3$ of architectural volume. In each instance, as we elaborate below, the larger, more monumental construction appears to have been built in the later phases.

Our discussion here covers only the 12 sites that either are single-component Late I or have two or more mounds or other unusual features (see Appendix VIII for descriptions of all sites with architecture). These sites include eight platforms and eight plazas. No plazas were identified as Early I constructions. None of the four plazas that are single component (Late I) or associated with mounds that likely were constructed in Late I are closed. Three plazas are associated with two mounds only, situated on opposite edges of the plaza; the fourth plaza has three mounds. So, although the characteristic pattern of constructing platforms around a plaza appears to begin in the Ejutla Valley during Late I, the mounds in these complexes are low, and the plazas were open to the exterior.

At four sites with preserved structures, the only visible ceramics were Late I. The architecture at these single-component settlements comprised single mounds or small mound-plaza groups. At three sites—EJ-LP-LP-2 (LI-9; Appendix IX, Fig. 32), EJ-EJ-LO-5 (LI-28; Appendix IX, Fig. 10), and EJ-YO-YO-11 (LI-62; Appendix IX, Fig. 42), the structures form small informal groups of two to four low mounds, but only at EJ-YO-YO-11 were we able to define a small plaza between the mounds. Only at EJ-EJ-LO-5 and EJ-YO-YO-11 are there mounds over 1 m high. The fourth site, EJ-EJ-LOG-2 (LI-3), consists of only one low mound. The total mound volumes at these four sites are low; none are larger than approximately 600 $m^3$.

Four other multicomponent sites have small mound groups similar to the single-component Late I sites. At least some of

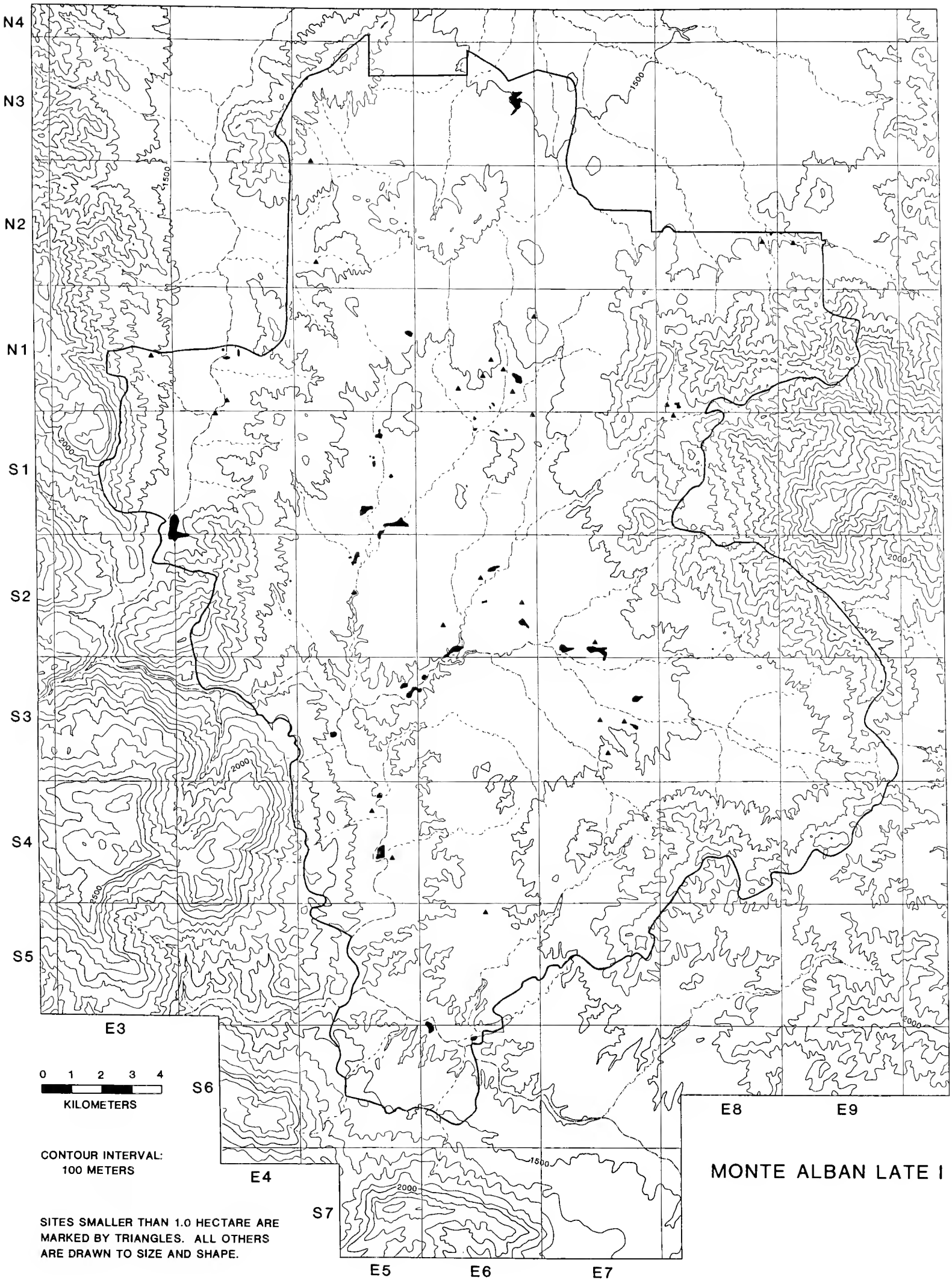



FIG. 5.14. Monte Albán Late I settlement in the Ejutla Valley.

the architecture at those sites may have been constructed during Late I. Monte Albán II is the most abundantly recorded other phase of occupation at three of the sites. Many of the mounds at these sites are taller than those at the four single-component sites (with at least one mound taller than 3 m at each site); however, these mounds may have built up through continued use and possibly were lower in Late I.

Late I was the largest phase of occupation at EJ-EJ-SJ-10 (LI-30; Appendix IX, Fig. 21), even though all the mounds at the site also had Early I and Monte Albán II ceramics. The

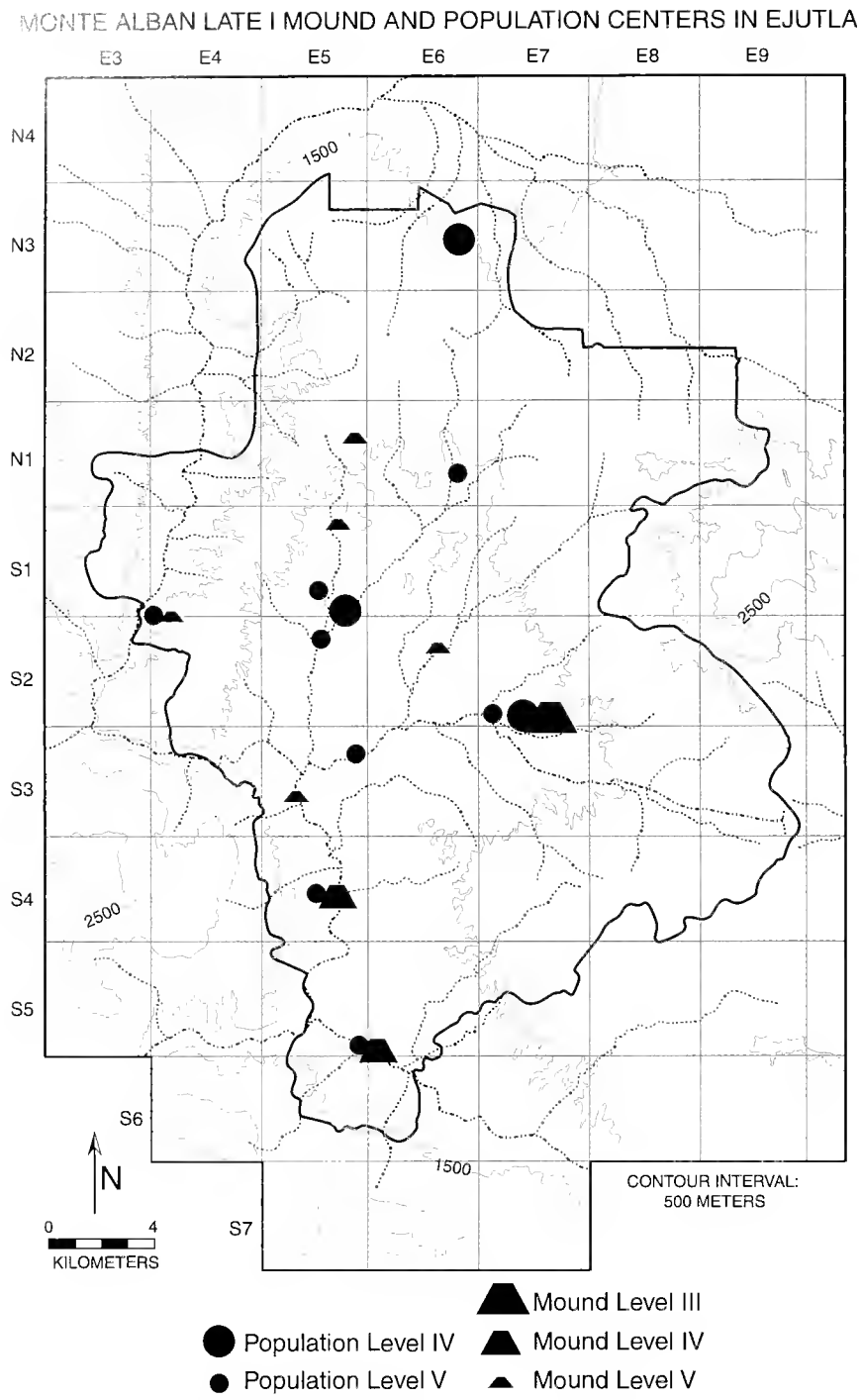



FIG. 5.15. Monte Albán Late I mound and population centers in Ejutla.

low elevation of most of the mounds is consistent with the single-component Late I sites. With four closely spaced structures and one platform, it would have been one of the larger Late I sites in terms of architecture.

Two other sites are equally large in Late I and Monte Albán II, the two phases of highest population at each site. EJ-LC-LL-1 (LI-63; Appendix IX, Fig. 30) consists of two mounds, both over 2 m tall; there is no discernible plaza between the structures. The mounds may have initially been constructed in Late I and increased in size during the subsequent Monte Albán II occupation. The Late I component at Chichihualtepec (LI-4; Appendix IX, Fig. 23) probably includes all three mounds at the site (Fig. 4.8). The fourth site, EJ-SAZ-SAZ-9 (LI-39; Appendix IX, Fig. 35), has a small formal architectural group consisting of three mounds around a small plaza. The northern mound appears to be a ballcourt (consisting only of two long mounds). All the other ballcourts recorded in Ejutla pertain to later periods, mostly Monte Albán IV or V.

An unusual site is EJ-EJ-EJ-42 (LI-53). This multicomponent site consists of one very large platform mound (3.5 m tall on one side) on which we found ceramics from Late I through Monte Albán V. Even though the mound incorporated a natural rise near the Ejutla River, it was still the single largest structure we mapped in the Ejutla region (it is possible that one or more platform mounds at the Ejutla site were larger, but the poor condition of mounds at that site prevented us from getting good measurements). The population of the site remained under 100 people until Monte Albán V, when the settlement expanded onto alluvial areas surrounding the structure. Construction of the platform may have begun in Late I, but we suspect that most of the construction occurred later.

We recorded Late I ceramics on at least nine mounds at three other sites, all of which were larger during Monte Albán II and IIIA. All three also had small Early I populations that may or may not have been associated with the mounds. At the large Ejutla site (LI-37; Appendix IX, Fig. 6), we found sparse Late I ceramics on or around the 12 pre-Hispanic structures that we mapped. The architeeture was formal, with groups of tall mounds constructed on top of very large platforms. Because of modern obstructions and disturbances, no plazas are discernible today. Even though the Ejutla site was twice as large in Monte Albán II and much of the fill appears to pertain to that phase, it was one of the three largest sites in the region during Late I. It seems likely that some of the structures were constructed during Late I (see discussion earlier in chapter). If all 12 structures were initially constructed in Late I, the Ejutla site would have been equivalent to Level III mound centers in Oaxaca. The other two sites—Amatengo (LI-58) and Yogana (LI-61)—have formal, closed architecture, consisting of 9 and 10 structures and platforms, respectively. Although both were among the largest Late I sites, continued growth during Monte Albán II and IIIA makes it difficult to determine what architecture may pertain to Late I.

Late I ceramics were present on all the mounds at Yogana (Fig. 5.16; Appendix IX, Fig. 43). The architecture consists of two large platforms, one of which is just below a four-mound group that surrounds a plaza with limited access. Two mounds were constructed on top of that platform. The other platform is located on a ridge just below the main complex at the site. At Amatengo (Fig. 5.17; Appendix IX, Fig. 33), Late I ceramics were present on all but one isolated mound. The site also included two large platforms (each with two mounds on top) that form two sides of a closed plaza. Two additional structures define the other edges of the plaza. The second plaza at the site sits on top of the largest platform and also is closed. The third plaza is more open, situated at the edge of the mound complex.

Yogana and Amatengo (with up to seven or eight mounds taller than 1 m) form the second level in the Ejutla Valley mound hierarchy, which corresponds to Level IV in Oaxaca. Based on the single-component Late I sites, though, public architecture in Ejutla tended to consist of small groups of two to five low mounds. Yet these are the sites that were abandoned after Late I. Other Late I sites with larger architectural groupings continued into Monte Albán II. Whether these sites were more architecturally complex in Late I than the ones that were abandoned or whether they did not have significant architecture until later is hard to discern without excavations.

In parallel with the Valley of Oaxaca (Kowalewski et al., 1989, p. 117), Late I sites with mounds in Ejutla were more likely to continue to be occupied than sites without mounds. The three sites with the most monumental architecture were initially occupied prior to Late I and continued into IIIA. Occupational continuity, however, was lower at sites where public architecture was composed of small groups of low

TABLE 5.13. Monte Albán Late I sites in the Ejutla Valley survey region with populations over 50, mounds, and/or ceramic collections.

| | Site no. and name | Grid square | Population | No. of mounds <1 m | No. of mounds ≥1 m | Mound volume ($m^3$) | No. of ceramic types | No. of cremas | Crema % of ceramic assemblage |
|---|---|---|---|---|---|---|---|---|---|
| 2 | EJ-EJ-CHI-1 (Chilozoa) | N3E6 | 330 | 0 | 0 | 0 | 3 | 0 | 0 |
| 3 | EJ-EJ-LOG-2 | N2E5 | 8 | 0 | 1 | 127 | — | — | — |
| 4 | EJ-EJ-SMC-7 (Chichihualtepec) | N1E5 | 61 | 0 | 3 | 4,026 | 33 | 16 | 16.0 |
| 5 | EJ-EJ-EV-2 and 13 | N1E6 | 15 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | EJ-EJ-EV-14 | N1E6 | 10 | 0 | 0 | 0 | 9 | 0 | 0 |
| 7 | EJ-LP-LP-5 | S1E5 | 44 | 0 | 0 | 0 | 7 | 0 | 0 |
| 8 | EJ-LP-LG-3 | S1E5 | 145 | 0 | 0 | 0 | 6 | 0 | 0 |
| 9 | EJ-LP-LP-2 | S1E5 | 69 | 1 | 3 | 609 | 11 | 0 | 0 |
| 12 | EJ-EJ-SMC-1 | N1E6 | 31 | 0 | 0 | 0 | 19 | 1 | 1.4 |
| 14 | EJ-EJ-SMC-2 | N1E6 | 8 | 0 | 0 | 0 | 6 | 0 | 0 |
| 15 | EJ-EJ-EV-15 | N1E6 | 123 | 0 | 0 | 0 | — | — | — |
| 20 | EJ-LP-LG-1 | S1E5 | 271 | 0 | 0 | 0 | — | — | — |
| 28 | EJ-EJ-LO-5 | N1E8 | 50 | 2 | 1 | 386 | — | — | — |
| 29 | EJ-LC-AE-1 | S2E5 | 122 | 0 | 0 | 0 | 4 | 0 | 0 |
| 30 | EJ-EJ-SJ-10 | S2E6 | 85 | 0 | 5 | 1,647 | 7 | 0 | 0 |
| 32 | EJ-BSM-BSM-21 | S2E6 | 21 | 0 | 0 | 0 | 3 | 0 | 0 |
| 33 | EJ-BSM-BSM-20 | S2E6 | 16 | 0 | 0 | 0 | 4 | 0 | 0 |
| 34 | EJ-EJ-EJ-1/ TAN-TAN-1 | S2E6 | 93 | 0 | 0 | 0 | 5 | 0 | 0 |
| 35 | EJ-EJ-EJ-1 | S2E7 | 136 | 0 | 0 | 0 | — | — | — |
| 37 | Ej-EJ-EJ-1 (Ejutla) | S2E7 | 274 | 0 | 12 | 80,000 | 26 | 8 | 11.0 |
| 38 | EJ-EJ-SCN-16 | N1E3 | 8 | 0 | 0 | 0 | 3 | 0 | 0 |
| 39 | EJ-SAZ-SAZ-9 | S1E4 | 222 | 0 | 4 | 1,526 | 6 | 0 | 0 |
| 40 | EJ-EJ-SCN-19 | N1E4 | 18 | 0 | 0 | 0 | 8 | 0 | 0 |
| 41 | EJ-EJ-SCN-18 | N1E4 | 41 | 0 | 0 | 0 | 20 | 0 | 0 |
| 43 | EJ-EJ-SCN-10 | S1E4 | 12 | 0 | 0 | 0 | 10 | 0 | 0 |
| 44 | EJ-EJ-SCN-14 | N1E4 | 8 | 0 | 0 | 0 | 10 | 0 | 0 |
| 45 | EJ-LC-AE-8 | S2E5 | 16 | 0 | 0 | 0 | 5 | 0 | 0 |
| 47 | EJ-TAN-TAN-2 | S2E6 | 73 | 0 | 1 | 775 | 8 | 0 | 0 |
| 49 | EJ-SAA-SAA-10 | S4E5 | 8 | 0 | 1 | 608 | 8 | 13 | 52.0 |
| 50 | EJ-TAN-TAN-2 | S3E6 | 39 | 0 | 0 | 0 | 6 | 1 | 10.0 |
| 52 | EJ-TAN-TAN-2 | S3E5 | 171 | 0 | 1 | 501 | 11 | 2 | 9.5 |
| 53 | EJ-EJ-EJ-42 | S3E7 | 96 | 0 | 1 | 15,155 | 14 | 1 | 2.0 |
| 54 | EJ-EJ-SO-4 | S3E7 | 17 | 1 | 0 | 196 | 8 | 1 | 3.0 |
| 56 | EJ-EJ-SO-5 | S3E7 | 62 | 0 | 0 | 0 | — | — | — |
| 58 | EJ-SAA-SAA-15 (Amatengo) | S4E5 | 186 | 1 | 8 | 16,890 | 27 | 7 | 7.0 |
| 61 | EJ-YO-YO-12 (Yogana) | S6E6 | 228 | 3 | 7 | 8,185 | 20 | 13 | 12.5 |
| 62 | EJ-YO-YO-11 | S6E6 | 19 | 2 | 1 | 325 | — | — | — |
| 63 | EJ-LC-LL-1 | S3E5 | 62 | 0 | 2 | 1,000 | 7 | 1 | 5.0 |

FIG. 5.16. View of Yogana on a low piedmont rise above the Miahuatlán River.

FIG. 5.17. Structures 2 and 5 at Amatengo, viewed from the southwest.

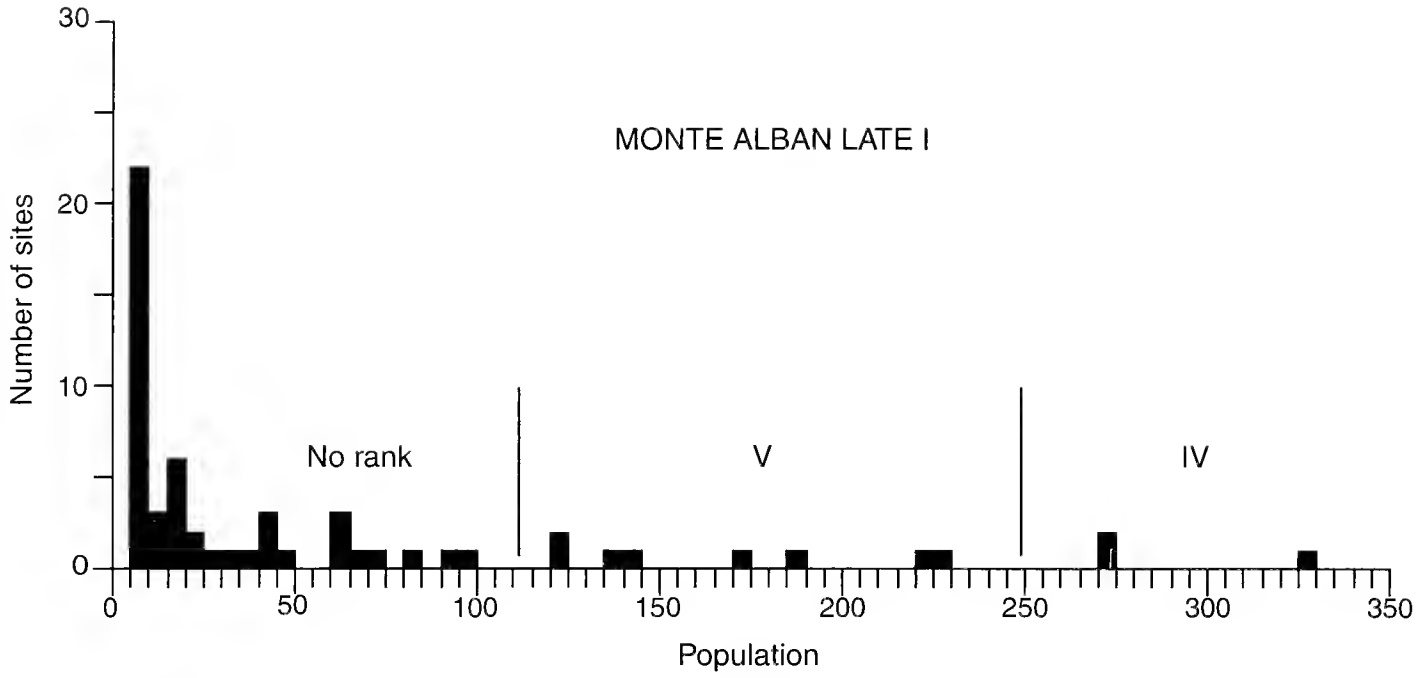



FIG. 5.18. Monte Albán Late I population histogram for Ejutla.

mounds. Some of these sites continued to be occupied only in Monte Albán II, while others were abandoned at the end of Late I. This sample provides a fairly clear picture of the small scale of public architecture in the Ejutla region during Monte Albán Late I.

Farther south, in Miahuatlán, over half of the recorded sites with Late I pottery on their surfaces have at least one mound. The largest site (located under the modern town of Miahuatlán) is like the Ejutla site (under the modern head town of Ejutla de Crespo), with more than a half dozen mounds that appear to have been occupied throughout most of the pre-Hispanic sequence (Markman, 1981, pp. 20–32). Yet none of the Late I sites with mound in Miahuatlán is single component, so the picture of Late I architecture is less clear there than for Ejutla.

## Late I Hierarchy

Coincident with the Late I expansion of Monte Albán, differentiation in settlement size emerged in the Ejutla Valley. Yet in Ejutla, in spite of significant population growth, there was much less breadth in the settlement hierarchy than in the Valley of Oaxaca, and no one site in Ejutla was much larger than others. Late I sites in the Valley of Oaxaca could be divided into six levels based on population size (Table 5.9). Sites in the Ejutla Valley can be divided into only three size levels at most (Fig. 5.18), corresponding to the three lowest levels of the Oaxaca hierarchy. In addition, the three largest sites in Ejutla are at the low end of Rank IV population centers in Oaxaca. The same pattern is present in the adjacent Sola Valley, where there was no single dominant center (Balkansky, 2002, p. 43).

A civic-ceremonial hierarchy based on mounds also developed in the Ejutla region during Late I, with possibly two or three levels of mound centers (Table 5.10). Amatengo and Yogana may have had as many as seven or eight mounds and the Ejutla site as many as 12. Yet based on the size and number of mounds at the single-component Late I sites in Ejutla, it also is possible that many fewer mounds were present at the three aforementioned sites and that all mound centers in Ejutla were near the low end of the mound hierarchy in the Valley of Oaxaca (Kowalewski et al., 1989, table 6.7). In either case, a hierarchy based on architectural construction was much less developed in Ejutla compared to Oaxaca, where there were five levels in the mound hierarchy.

In the Valley of Oaxaca, the Rank II mound centers stand out as more distinct from other levels than was the case in Early I. The only two Late I Rank II sites were located in Etla, whereas each valley arm had at least one Rank III site (Fig. 5.12). In Etla, civic-ceremonial activities may have been more diversified, hierarchically ordered, and closely linked to Monte Albán, yet it also is possible that the Level III sites in other parts of the valley carried out some of the same functions as the Level II sites in Etla. No site in Ejutla was equal to any of these mound centers.

The flatness in the mound hierarchy in Ejutla is matched by other frontier areas in the Central Valleys of Oaxaca, especially eastern Tlacolula, and southern Valle Grande/Ocotlán (Kowalewski et al., 1989, p. 130) and also in the Sola Valley (Balkansky, 2002, p. 43). The largest Late I center in the southern arm of Oaxaca was Tilcajete (Fig. 5.12), a Rank III center with 14 mounds and a population of around 1,000. Subsequent excavations at the site have documented civic-ceremonial architecture dating to Monte Albán Late I (Spencer & Redmond, 2004a). Farther south, Santa Inés Yatzeche may have had 13 mounds, yet it had a much smaller population (170). All other mounded sites in southern Valle Grande, including Santa Ana Tlapacoyan, are similar to the Ejutla Valley sites that have architecture (five to seven mounds and populations between 59 and 343).

The eight Late I sites in Ejutla with at least two mounds taller than 1 m (nine if EJ-EJ-EJ-42 is included) are fairly well dispersed across central and western Ejutla (Fig. 5.15), with nearest-neighbor distances of 4, 6, or 8 km between them. As in Early I, most are situated along the Atoyac and Ejutla Rivers and the major tributaries. The greatest distance separates the mounded sites along the Atoyac River from those on the Ejutla River and its northern tributaries.

Although there is not complete agreement between the population and mound hierarchies in Ejutla, there is some overlap at the top of each hierarchy (the three sites with the most architecture are among the six largest population centers), and the overlap is greater in the south (the three

TABLE 5.14. Average number of ceramic types at Monte Albán Late I sites in Ejutla and Valley of Oaxaca subareas.

| | Types per site | Sites with mounds | Sites without mounds |
|---|---|---|---|
| Ejutla Valley | 9.8 | 16.8 | 7.1 |
| Oaxaca Valley | 10.6 | 18.0 | 7.0 |
| Etla | 13.6 | 20.3 | 9.1 |
| Central | 6.8 | 21.4 | 4.8 |
| Central (without Monte Albán) | 5.3 | 10.3 | 4.8 |
| Valle Grande | 11.1 | 17.3 | 7.4 |
| Ocotlán | 8.4 | 11.5 | 6.9 |
| Tlacolula | 11.2 | 16.8 | 7.6 |

largest sites in the south also have the most of mounds). The distributional pattern of sites in the mound hierarchy is less regular than for the population centers. The three sites with the most mounds (the Ejutla site, Amatengo, and Yogana) are in the southern half of the Ejutla Valley. Overall, there is a southern distribution to mound centers in the Ejutla Valley.

## Late I Ceramics

Late I ceramics in the Ejutla region are very similar to varieties found in the Valley of Oaxaca, as are ceramics from the Sola Valley (Balkansky, 2002). These ceramic affiliations indicate regular interactions between people of these adjacent regions and possibly even population movements or colonization of the smaller valleys from the larger region to the north.

### Late I Ceramic Types per Site

There was much greater similarity in the ceramics types-per-site indices for Oaxaca and Ejutla in Late I (Table 5.14) than in Early I. The average number of types per site in Ejutla was just slightly below the average for Oaxaca, suggesting that the Ejutla region was beginning to be more connected economically to the Valley Oaxaca, even if, like much of Ocotlán, it remained outside the main settlement cluster centered at Monte Albán (Fig. 5.10). In addition, the average number of ceramic types at sites with mounds is similar for the two regions, as is ceramic diversity at settlements lacking mounds (Table 5.14). In both regions the difference in the types-per-site index between these two classes of settlements increased over the Early I figures, mostly because of an increase in the number of ceramic types at sites with mounds. For Oaxaca, the average number of ceramic types at settlements that lacked mounds did not change from Early I, indicating that increased access to ceramic variety occurred at settlements that had more civic-ceremonial functions. The pattern is different for Ejutla, where access to ceramic variety more than doubled at sites with mounds but also increased at sites without them. This pattern reflects generally expanded economic connectivity with communities in the Valley of Oaxaca.

Variability in the types-per-site index for subareas was less pronounced than it had been in Early I. Etla still had the highest average number of ceramic types per site; however, in Late I the types-per-site index for Central was lower than for Ocotlán and Ejutla, even when Monte Albán is included (Table 5.14). Low numbers of types per site in Ocotlán and Ejutla are likely due to distance from Monte Albán and production localities in the main Oaxaca settlement cluster. In contrast, the low types-per-site index for the Central subarea reflects other factors. A comparison of the types-per-site index for sites with and without mounded architecture in each subarea reveals three distinct patterns that largely reflect spatial position relative to Monte Albán. Sites with mounds in Etla have the highest number of ceramic types per site; sites without mounds also have higher ceramic diversity than sites without mounds in other parts of the valley. In the Central subarea (excluding Monte Albán), both classes of settlements have the lowest ceramic diversity. In all other subareas, including Ejutla, ceramic diversity at mounded sites and those sites without are intermediate between Etla and Central.

Not unexpectedly, access to ceramic variety was greater at sites with mounds than at sites without (Table 5.14). Yet both sets of sites near Monte Albán had lower ceramic diversity than similar sites located elsewhere in the valley, including in more peripheral areas like Ejutla. This is a very significant change from Early I, when sites with mounded architecture in the Central subarea had the highest average number of ceramic types. Whereas sites in Etla (part of the original core area of the valley) continued to enjoy greater access to a variety of goods, those sites (and mound centers) closest to Monte Albán appear to have faced high tribute or tax demands that may have impacted their economic well-being and lessened their access to goods.

As noted above, in contrast to Early I, the inhabitants of larger Late I Ejutla settlements did gain access to greater ceramic variety than did the occupants of smaller sites. There also are spatial differences in access across the Ejutla region. Late I settlements in northern Ejutla averaged slightly more ceramic types per site (10.2) than contemporaneous settlements in southern Ejutla (9.7). Although the difference was markedly reduced from what it had been in Early I, proximity to Oaxaca still appears to have affected access to some goods. Chichihualtepec (LI-4) in the northern cluster had the highest number of ceramic types in spite of its small population. In the southern cluster, sites with high population and architecture had more ceramic types (the Ejutla site, Yogana, and Amatengo). As we discuss below, other differences in ceramic distributions indicate that the northern and southern settlement clusters interacted differently with Oaxaca. Although the settlement pattern data and types-per-site index indicate the continuation of horizontal exchanges and relationships between settlements in Ejutla and southern Valle Grande, vertical (and elite) interaction and exchange linkages (both inside Ejutla and between Ejutla and Oaxaca) were assuming greater importance.

### Late I Ceramic Distributions

Sites in the Ejutla Valley continued to obtain crema pottery, although like other subregions in the Valley of Oaxaca, in lower proportions than during Early I (Table 5.1; Kowalewski et al., 1989, app. VI). As noted above, this change is partly a methodological issue in that fewer types can be defined for Late I (in all of Oaxaca the percent of Late I sites having any crema pottery—decorated or undecorated—decreased to

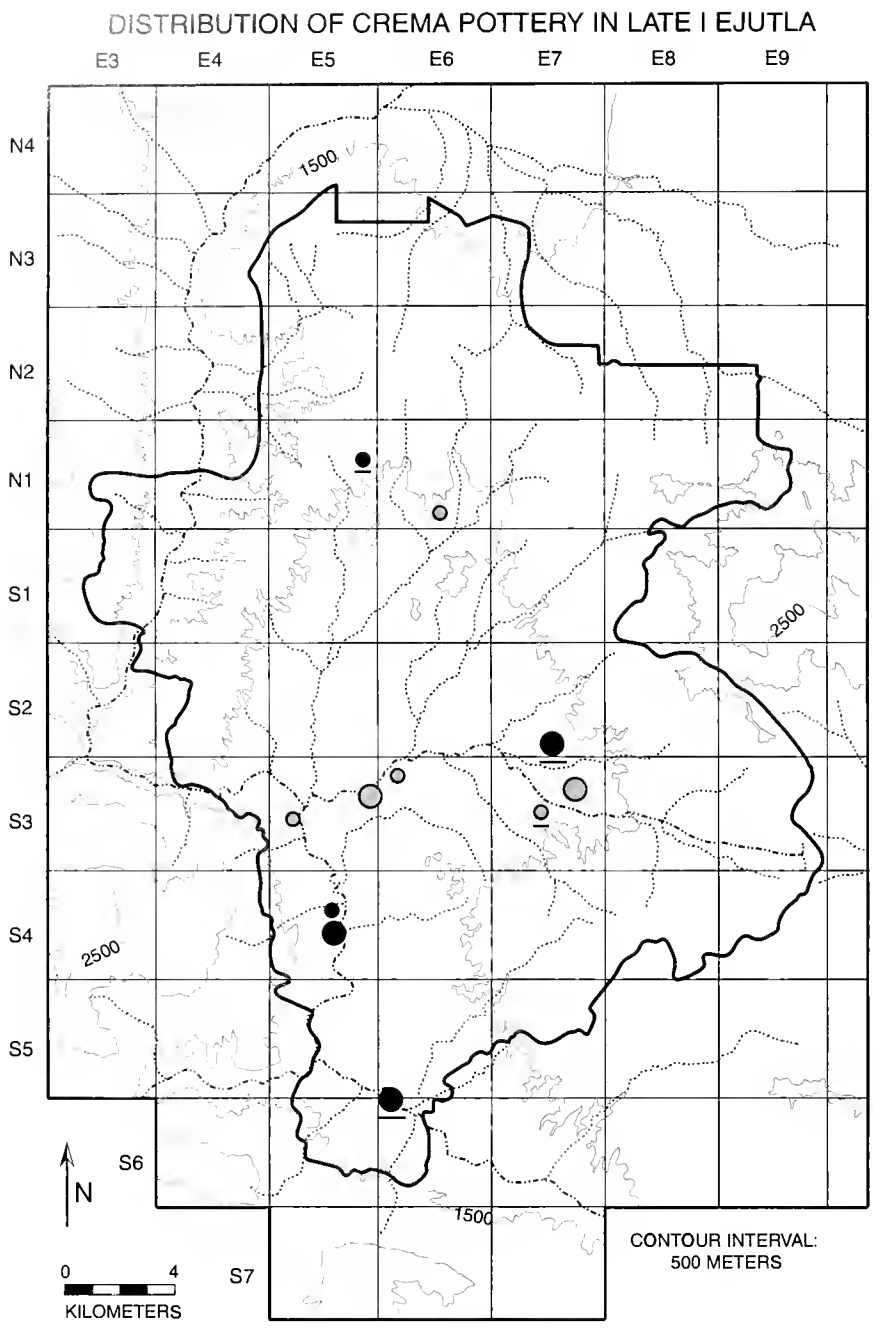



FIG. 5.19. Distribution of crema pottery in Ejutla in Late I.

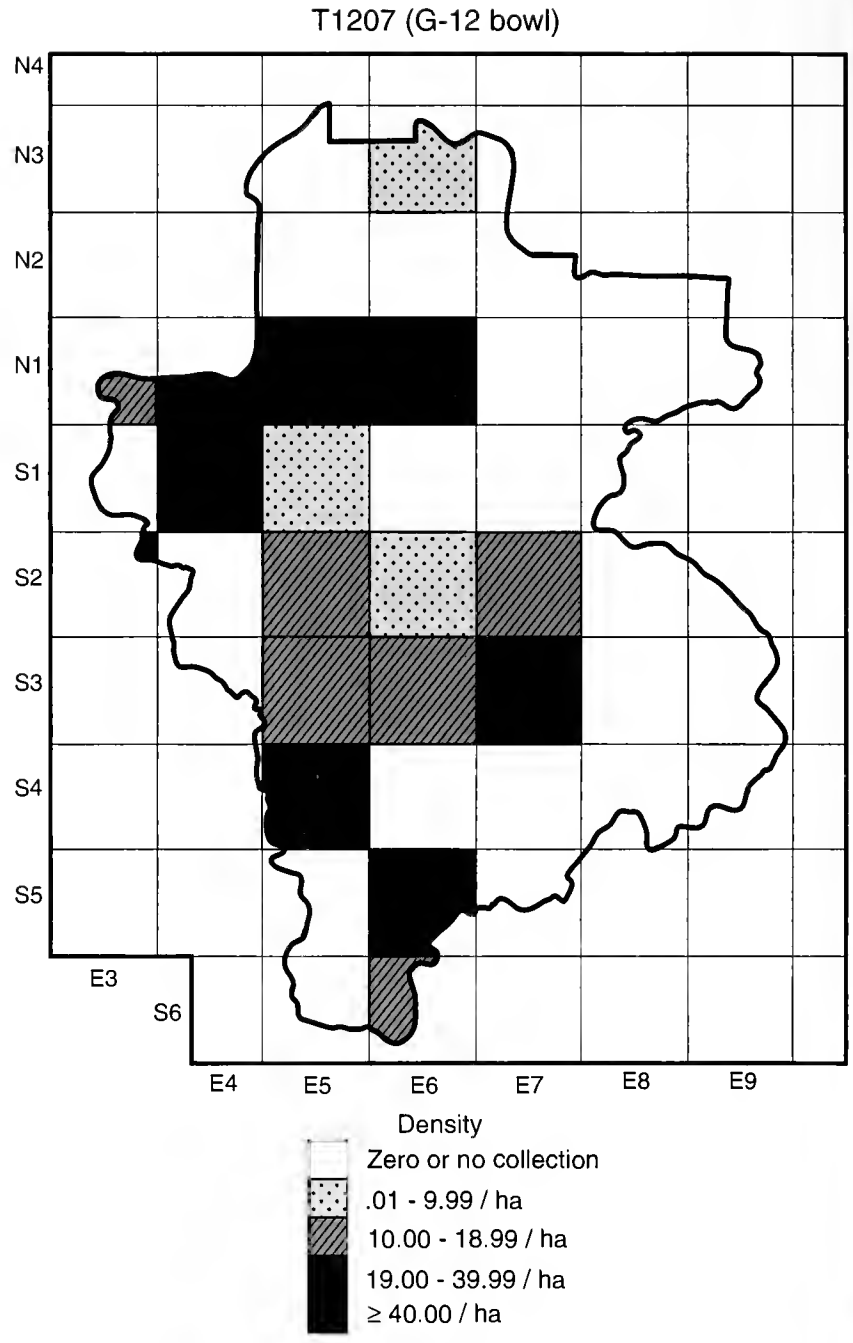



FIG. 5.20. Distribution of G-12 bowls (T1207) in Ejutla in Late I.

17.5% from 24% in Early I). Café pottery increased (often copies of cremas), whereas the percentage of gris ceramics stayed the same. Cream-paste wares also were rare in the Sola Valley (Balkansky, 2002, p. 37). For Ejutla, there are changes in the distribution of cremas that indicate shifting patterns of integration and that the lower numbers of cremas are not just the result of resistance to interaction with Monte Albán.

Of the Ejutla Valley sites with probable Late I cremas, approximately half have architecture, and half do not; half are large (above 75 population), and half are not. The major change from Early I was in the distribution of the cremas; no longer did the northern sites have greater access to these cream-paste wares (Fig. 5.19). Only two sites in the northern cluster have cremas (17 total pieces); nine in the southern cluster do (47 total pieces). This pattern also mirrors to some extent the types-per-site pattern. Only one of the three sites with mounds in the northern cluster had cremas, while four of the five in the south cluster did. So a pattern that becomes much stronger in Monte Albán II may have its beginning in Late I. One Early I pattern continues, though, in that the bimodal distribution of cremas (half of sites with 7–16 pieces, the rest with only one or two) does not seem related to site size or presence of architecture. This pattern indicates uneven access between sites but not necessarily related strongly to high status. This also appears to fit a pattern of localized distributions of (or access to) crema ware in Oaxaca. Although the sample is smaller, the pattern is the same when we consider only those sites with definite Late I cremas.

Based on paste composition, some of the cremas in the Ejutla Valley appear to be local variants. In subsequent investigations at the Ejutla site, under the modern head town, we excavated several pit kilns (Balkansky et al., 1997; Feinman & Balkansky, 1997). Although those kilns date to the Classic period and were used to make gris and café wares, local potters may earlier have copied Oaxaca pottery and distributed them to nearby sites. The Ejutla site is part of the southern settlement cluster where most of the cremas are found.

Gris ceramics make up more than half of the assemblage. By far the most common Late I type is the G-12 bowl (T1207), 29% of the total. These incised bowls are fairly widely dispersed across the Ejutla region, with by far the heaviest concentration in several small sites in the western part, in the area that often was linked to the valley through Tlapacoyan (Fig. 5.20). The G-12s are found at both small and large sites, with and without architecture. In the Valley of Oaxaca, G-12s are abundant in Etla, northern Valle Grande, and especially at Monte Albán (Kowalewski et al., 1989, p. 149). Lower quantities are found elsewhere. The amount of G-12s in Ejutla is similar to southern Valle Grande and

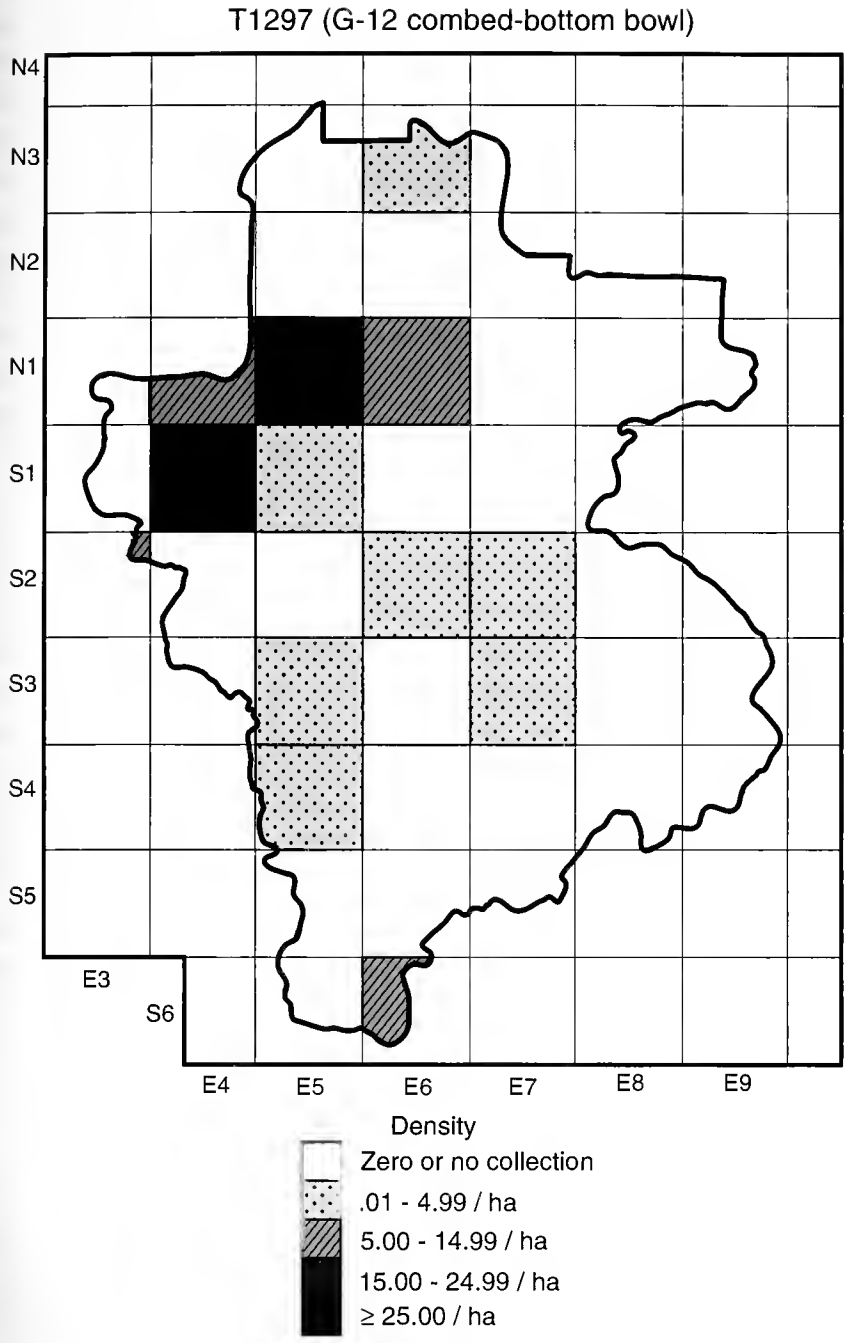



FIG. 5.21. Distribution of G-12 combed bottom bowls (T1297) in Ejutla in Late I.

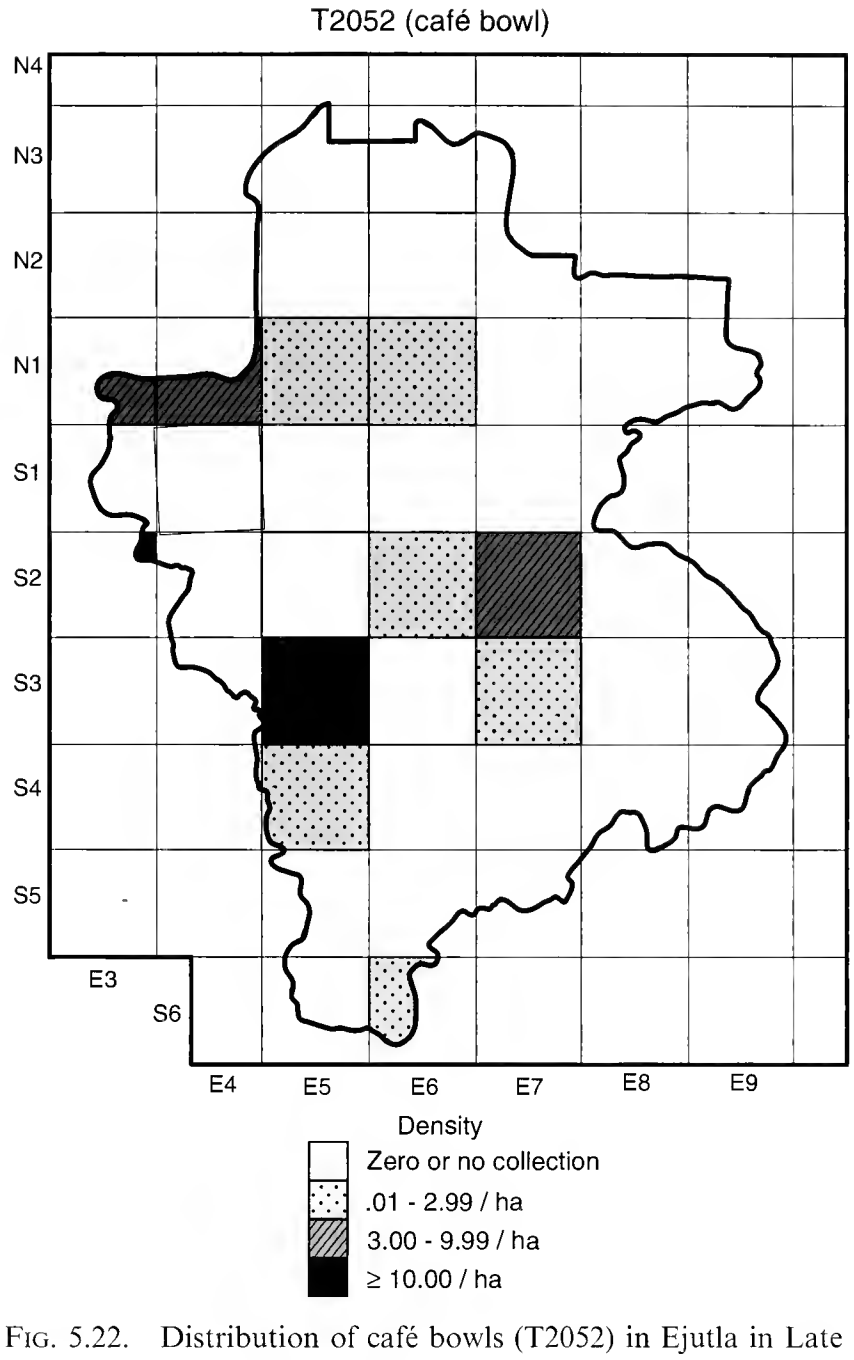



FIG. 5.22. Distribution of café bowls (T2052) in Ejutla in Late I.

western Tlacolula (amounts in eastern Tlacolula were even lower than in Ejutla).

Combed bottom G-12 bowls (T1297), a more diagnostic and definitive Late I marker, constitute 7.4% of the Ejutla Late I assemblage. These decorated bases show the same distributional pattern as the G-12s but with slightly lower densities in southern Ejutla (Fig. 5.21). In the Valley of Oaxaca, the greatest abundance of combed bottoms is in northern Valle Grande and farther north (Kowalewski et al., 1989, p. 113, fig. 6.1). The quantity of combed bottoms in Ejutla is quite a bit less than for all other subregions except eastern Tlacolula. Based on the distribution of gris and crema ceramics, it appears that Ejutla was integrated economically into Oaxaca to a degree similar to other peripheral parts of the valley, maybe less than the Valle Grande or western Tlacolula, but possibly to a greater extent than eastern Tlacolula.

*Comales* (tortilla griddles) were relatively rare in Ejutla, especially compared to Etla, the Central area, and the Valle Grande, where 774 *comal* sherds were found (Kowalewski et al., 1989, p. 149). We recorded 37 in Ejutla, similar to the frequency of *comales* in Ocotlán and Tlacolula combined (40). There may have been fewer demands on agricultural work and labor in the outlying areas that were less integrated into the Monte Albán polity than at the core, where surplus production was needed to feed Monte Albán (Nicholas, 1989). Where agricultural production was more labor intensive and, perhaps, more specialized, intrahousehold and gendered divisions of labor may have become stricter, and the production of tortillas, using *comales*, may have increased in use/frequency (Feinman, 1986; Blanton et al., 1999, pp. 94–96). In areas where such demands were high, certain segments of the population may have farmed with greater frequency farther from home, promoting the importance of a mobile meal, including tortillas. In contrast to other traditional ways to prepare maize (such as steamed or moist cooked corn), tortillas can be eaten later or stored away, and they are portable.

The most common café vessels in the Ejutla Valley are jars (T2013A, T2013C) that are not especially time sensitive. Thin café bowls (T2052) pertaining to Monte Albán I-II are the next most common. This type has a patchy distribution across Ejutla (cafés in Oaxaca also have patchy distributions; Kowalewski et al., 1989, p. 149), with several hot spots in the northwestern corner and in the southern settlement cluster. Except for the Ejutla site (LI-37), these café bowls are more frequent in sites that have few or no cremas, and most are in western Ejutla near the Atoyac River (Fig. 5.22). No sites have high densities of all three ceramic varieties—cremas, thin café bowls, and combed bottom bowls. The northwestern corner of the Ejutla region has high numbers of combed bottoms (T1297) and thin café bowls (T2052) but no cremas.

Chichihualtepec (LI-4) has high numbers of cremas and combed bottoms but few café bowls. Sites in the southern cluster, in general, have more cremas, but except for Yogana (LI-61), Amatengo (LI-58), and the Ejutla site (LI-37), no other sites also have high numbers of either combed bottoms or thin café bowls. The Ejutla site has fairly high numbers of T2052s but relatively low frequencies of T1297s, Amatengo has only a few T2052s and T1297s, and Yogana has almost no T2052s but very high T1297s. These sites may have been part of different distribution networks.

The distribution of the most highly decorated bowls indicates that high status was not the controlling distributional factor it was to become later. There were fewer highly decorated bowls in Ejutla compared to Oaxaca; the proportion of decorated to basic bowls was about 10% for Ejutla and over 15% for Oaxaca. Only 7 of the 11 highest decorated bowls (with production step measures of 6.0 or greater) are present at sties in the Ejutla region (Feinman, 1989), for a total of 32 pieces. Just under half are at sites with mounds (47%); these decorated vessels are just as likely to be found at sites lacking such earthen features.

Thus, given the distance between Tilcajete and the Ejutla Valley and the sparse population between them, Ejutla does not appear to have been closely linked to Tilcajete, and for Ejutla, the main route of interaction and exchange with the center of the Valley of Oaxaca likely continued to follow the Atoyac River, through Tlapacoyan, in the western part of the Valle Grande (Tilcajete is in the east).

## Late I Integration

As in Early I, the Valley of Oaxaca can be divided into three large settlement clusters, although the boundaries or breaks between these clusters are much less clearly defined than they were earlier. In Late I, the cluster centered on Monte Albán reached farther south into the Valle Grande (Fig. 5.10). This cluster was the most densely occupied and hierarchically organized, with over half of the 15 largest sites (with populations over 400) in the region located within its bounds and over three-quarters of the regional population (the same pattern we saw in the Early Formative cluster around San José Mogote).

The settlement cluster in Tlacolula continued to be centered on the site of Yegüih (Fig. 5.12; Kowalewski et al., 1989, p. 137). The Tlacolula subregion appears to have been more integrated at this time, as Yegüih was ringed by low-level sites with earthen mounds, many of which were located on the edge of the valley system. The most dispersed and poorly defined cluster encompasses southern Valle Grande and the Ejutla Valley, which appear to have been less integrated into the Monte Albán polity. We do not believe that these communities were completely autonomous, but the connectivity of these settlements with sites to the north was less direct and intense than for the communities in the core (Feinman, 1998). In the two previous phases, each cluster contained at least one of the region's largest sites, yet in Late I, none of the largest sites was located in the southern cluster, while only one (Yegüih) was in Tlacolula. Most of the southern area had been only sparsely settled before Late I and appears to have continued as a "frontier" area that was poorly integrated into the rest of the valley. No site in Ejutla was clearly larger and more architecturally complex than the others.

When examined together, the settlement and ceramic data point to significant changes in the southern part of the Central Valleys of Oaxaca during the transition from Early I to Late I. These southern areas in Late I were part of a continuous network of settlements that shared cultural conventions that linked them to the Valley of Oaxaca. Although Ejutla remained largely a frontier area on the southern fringe of the Monte Albán polity, greater economic connectivity (as indicated by greater ceramic diversity) further integrated that region's populace in Late I, thereby contributing to the Ejutla Valley's more rapid population growth, likely spurred by some in-migration. The population of Ejutla was more politically differentiated in Late I compared to Early I, as suggested by more sites with architecture and an emerging population hierarchy. More sites with architecture and an emerging site hierarchy also were recorded in the Sola Valley (Balkansky, 2002).

As connectivity between Ejutla and the Valley of Oaxaca increased, the north/south gradient in the Ejutla region became less pronounced than in Early I, and a more dendritic network centered on the Ejutla site (LI-37) began to develop. Perhaps the exception is the northwestern corner of Ejutla, near Tlapacoyan, which continued to be more tied into Oaxaca, as mound centers stretched down the Atoyac River into the Ejutla Valley (Fig. 5.12). As a small center, Tlapacoyan likely had low-level civic-ceremonial functions that reached into Ejutla, spreading down-the-line interaction/exchange south along the Atoyac River. One of the larger Late I sites in our survey area, EJ-SAZ-SAZ-9 (LI-39), is in western Ejutla, near the Atoyac River, just south of Tlapacoyan and near the pass to the Sola Valley. It is closer to one of the large Late I sites in Sola (S82; Balkansky, 2002, p. 38) than it is to the other large sites in the Ejutla Valley. Influence/exchange/economic interaction likely moved south to Sola through this site.

Other sites with mounds in the Valle Grande—Santa Inés Yatzeche and Tilcajete—were more distant. The northernmost mound site in Ejutla—Chichihualtepec—was 10 km from Tlapacoyan, 15.3 km from Santa Inés, and 26 km from Tilcajete. The pattern for population centers was a bit different (Fig. 5.11), as families may have budded off and dispersed into Ejutla through Ocotlán, beginning with the large site at Chilazoa (LI-2). Some of these new communities may have been established in response to the animosities between Monte Albán and Tilcajete.

The types-per-site index also indicates that important changes in the relationship between Oaxaca and Ejutla were starting to occur in Late I. Although the correlation between types per site and population is low ($r = .282$), the three sites in Ejutla with the most architecture also are among the six sites with the most types per site. Only two of the six sites with the highest types per site are not in either the population or the mound hierarchy. These six sites are evenly divided between the two clusters, with the most overlap occurring in the southern cluster.

Overall, the correspondence or overlap between population and mound hierarchies was lower for Ejutla than Oaxaca. Mounds were present at only a third of the Ejutla population centers. Yet the overlap between the population hierarchy, the mound hierarchy, and the types-per-site index in Ejutla was greater in Late I than in Early I, indicating the beginnings of greater hierarchical development. The pattern is especially strong for the three sites at the top of the mound hierarchy (the Ejutla site, Amatengo, and Yogana). All three are in the southern cluster and have large populations and high numbers of different ceramic types. Even if we discount to some degree

the mound information, because of the problem of dating mounds at multicomponent sites, there still is more overlap between sites with high population and greater ceramic diversity in the southern cluster, whereas there is no overlap in the northern cluster. Also, although the three sites in the northern cluster with the most ceramic types are small, they are the same three sites that had the greatest ceramic diversity in Early I; the largest sites in the northern cluster had low ceramic diversity. In contrast, in the southern cluster, the three largest sites had the greatest ceramic diversity. The two clusters may have had different relationships with Oaxaca, with greater hierarchical development in the southern cluster.

With the north/south distinction in access to goods breaking down in Late I, the larger sites in the south gained greater access than surrounding smaller sites. The north, where site size was less of a factor in access to goods, may have continued longer as a frontier region of Oaxaca at the same time that the southern cluster, centered on the Ejutla site in the central Ejutla River valley, was beginning to develop new networks and a more hierarchically organized system. This change was significant, as the networks that developed in Late I may have been instrumental in the following buildup of southern Ejutla in Monte Albán II, at a time when northern Ejutla was largely depopulated. Closer ties to the Pacific Coast are one possible factor that led to a change in the relationship between centers in Oaxaca and those in southern Ejutla, the three aforementioned sites (the Ejutla site, Amatengo, and Yogana) that became important centers in Monte Albán II. During Late I, as rulers at Monte Albán consolidated power and territory, their interests may have become somewhat more expansionary and focused on the acquisition of exotics, such as marine goods, practices certainly manifest in subsequent Monte Albán II.

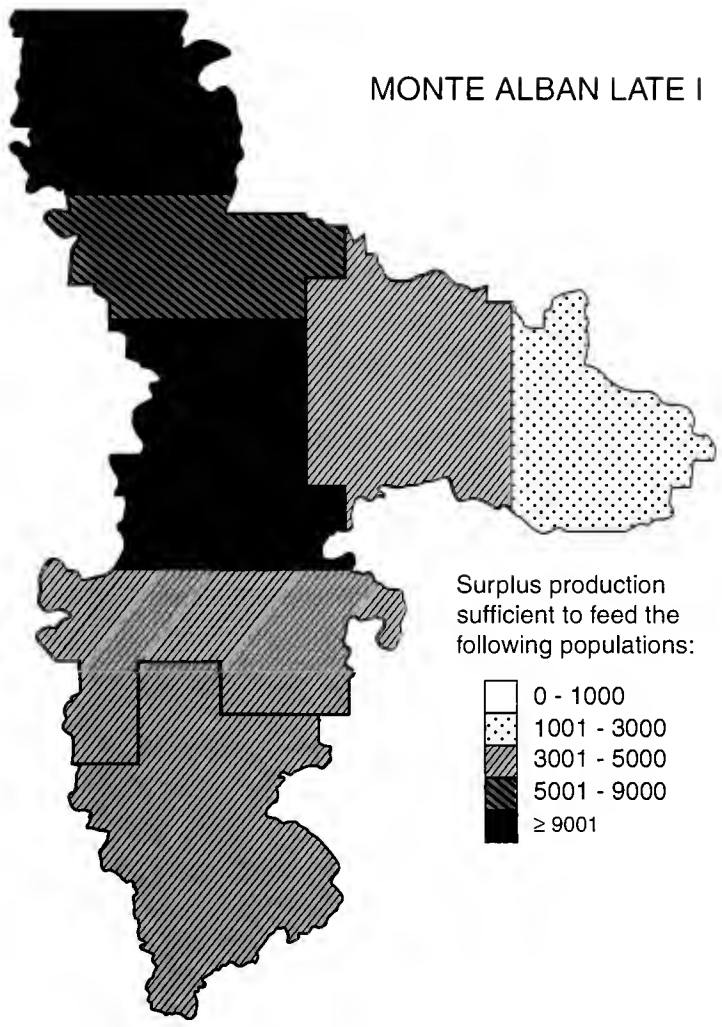



FIG. 5.23. Monte Albán Late I surplus in Ejutla and Valley of Oaxaca subregions (based on rural producers, Central area does not include Monte Albán's population).

## Human/Land Relationships in Late I

The Late I population of the Valley of Oaxaca increased to almost 20% of the maximal number of people that the regional land resources could have supported (Nicholas, 1989, p. 494). In contrast, for the Ejutla Valley, the estimated archaeological population was less than 10% of the maximal resource-based potential (Table 5.8). In the Valley of Oaxaca, subregional differences in this ratio increased. The archaeological population in the Central area was closest to its resource-based potential, while populations relative to resource-based potentials were the lowest in southern Valle Grande and in Tlacolula (similar to Ejutla). As in Early I, valleywide population dispersals do not match expected distributions based on available resources. These patterns are in line with settlement data that show that the core of the Late I Monte Albán polity was centered and had the greatest political influence in Etla, Central, and northern Valle Grande.

In the Valley of Oaxaca, new Late I settlements tended to be located on or near some of the best land available (Nicholas et al., 1986). Although the Late I population in the Ejutla Valley was well situated relative to agricultural resources, only two of the nine newly occupied grid squares were among the best available (previously unoccupied). In Ejutla, most of the Late I growth (88%) took place in previously occupied squares. Even though settlements still were not distributed across the landscape to take greatest advantage of all the best land, settlement location in Ejutla did conform more closely to agricultural considerations than in any other phase.

When available labor and increasing maize yields are considered, the relationship between the archaeological and potential labor-based populations did not change much from Early I. The Late I population in Ejutla was just under 50% of the potential population, compared to 75% for the Valley of Oaxaca. Only in the Central subregion of Oaxaca was the population higher than the agricultural workforce could have sustained. Little variation was evidenced between the other subregions, including Ejutla (all of which had populations that were between 45% and 60% of potential levels).

Even with the expansion of the Monte Albán polity farther to the south in the Valle Grande, the subregional pattern of surplus production also did not change much between Early I and Late I. The greatest surplus would have come from Etla and northern Valle Grande and then from rural producers in the Central subregion (Fig. 5.23). Surplus production was less in Central than in Etla and northern Valle Grande for two reasons—it is the smallest subregion, and it has less high-quality land resources and rainfall than either Etla or the Valle Grande; the limits of its productive capacity would have been reached sooner. As in Early I, the core area could have grown enough food for all its residents, including Monte Albán. There was potentially even more to spare than in Early I, in spite of the much larger overall population, in part because Monte Albán constituted a smaller proportion of the core population than in Early I. Surplus potential was lower in the rest of the valley, including Ejutla and especially eastern Tlacolula. The main difference in potential surpluses was the core (Etla, Central, and northern Valle Grande) versus the rest of the valley (southern Valle Grande, Tlacolula, and Ejutla).

The core area could have produced twice what the rest of the valley did.

Surplus potential in the Ejutla Valley increased considerably from Early I because of the large increase in population, much of which was well situated near good land. As in prior phases, all grid squares could have produced a surplus in average rainfall years, with total production more than double what was needed. In general, squares with larger populations also could produce the largest surplus.

In a valleywide low-rainfall year, agricultural production could have fallen short by as much as 30% in Oaxaca and 15% in Ejutla, requiring reduced consumption and/or greater reliance on noncultivated resources. The areas in Ejutla that would have been the most affected are the Los Ocotes area, surrounded by uninhabited piedmont and mountain slopes, in northern Ejutla (Fig. 3.4) and settlements in the low hills between the Atoyac River and the northern tributaries of the Ejutla River, an area with "relatively dense" population in Late I. Yet the latter population could have selected unoccupied land farther away that was located closer to more reliable water sources. Greater use of wild resources, saving corn kernels from wet years, and exchange with neighbors also would have been possible avenues to obtain sufficient food. As in recent times (e.g., Parsons, 1936; Beals, 1975), household and community exchange and interdependence may have been important coping mechanisms in the Valley of Oaxaca from the advent of agrarian settlement and village life.

Two other areas where agricultural crops may have suffered in dry years are in southern Ejutla (near Amatengo and Yogana). These settlements are isolated from the main cluster of sites, situated along either the Atoyac River or the Miahuatlán River, in areas of steep-sided hills consisting of Class III land, with only small patches of Class II land along the rivers. Depending on the length of the dry spell, maize kernels saved from wet years may have been sufficient. With populations of only a few hundred and few other settlements in the area, wild resources, including xerophytic plants such as maguey and nopal, also would have provided sustenance and a basis to exchange with better-situated communities (relative to good agricultural land) where potential surpluses were possible even in dry years (e.g., Feinman et al., 2007).

## Late I Summary

Significant changes occurred in the Ejutla Valley during Monte Albán Late I. The population increased more than 10-fold, and a hierarchy of settlements began to develop, whether based on site size or mounded architecture. The greatest buildup of settlement was along the Atoyac and the Ejutla River and its tributaries in the central and southern parts of the Ejutla Valley. Populations from the Valley of Oaxaca likely spread into these areas, along with people from outlying mountainous regions. Although not directly controlled or politically well integrated into the Monte Albán polity, the demographic expansions in Ejutla and Sola coincided with a great increase in Monte Albán's size, the carving and display of numerous *danzantes* at that site, and the construction/elaboration of public buildings on the city's Main Plaza. We interpret these shifts across the study region as interdependent but perhaps indicative of expanding exchange connections and population movements rather than the product of persistent political interventions. This interaction was not necessarily or exclusively direct, more likely occurring in a down-the-line or domino-like fashion, where the interactions between Monte Albán and places like Tilcajete ramified farther from the region's largest center.

There was no one dominant center in the Ejutla or Sola regions that was similar to Monte Albán in the center of the valley, San José Mogote in Etla, Yegüih in Tlacolula, or Tilcajete in northern Valle Grande that would have been the nexus for interaction/control or even more direct antagonistic competition. The flatness of the settlement hierarchies in Ejutla and Sola indicates to us that connections or interaction with the larger polity to the north were not handled through one or two central nodes in these more distant areas. Both Ejutla and Sola appear to have continued as partially integrated frontier areas. They were not independent of the Valley of Oaxaca, nor were they yet true peripheries or fully integrated provinces of the larger Monte Albán polity. If the quantity of Monte Albán crema pottery present at a site or in a region may be used as an indicator of independence from or integration/annexation by the regional capital (Spencer & Redmond, 2003, pp. 36–39; Spencer, 2010), then the Sola Valley was less integrated into the Monte Albán polity than even Ejutla was (cf. Balkansky, 2002, p. 50; Sherman, 2005, p. 253; Elson & Sherman, 2007, p. 270; Spencer, 2009, p. 144, 2010).

Interaction and exchange with the Valley of Oaxaca still principally followed the Atoyac River, with many fewer connections through Ocotlán. Perhaps Tilcajete's antagonistic relations with Monte Albán made southern Ocotlán a less desirable or safe place to live (at least periodically). Yet Tilcajete's resistance did not completely impede interaction between the Monte Albán polity and all areas farther south. The exchange of cremas to Ejutla continued, most likely following the Atoyac corridor west of Tilcajete. Most of the cremas were found in the larger sites in central and southern Ejutla. The buildup in central and southern Ejutla, in conjunction with continued interaction/exchange along the Atoyac River corridor, likely laid the groundwork for a fuller political incorporation of the Ejutla Valley into the Monte Albán polity that took place in Monte Albán II.

# Chapter 6: Monte Albán Imperialism: Monte Albán II

> The growth of the early civilizations represents one of anthropological archaeology's most challenging but unmanageable problems. It is unmanageable because the complexity and variety can overwhelm. Given this, there are basically two strategies that researchers can adopt. One is to ignore that complexity and try to find the one factor or only a few that cut right to the core of things and offer a maximum of explanatory power with a minimum of bother. The other is to try to match the complexity of the reality with complexity and richness in theory and data.
>
> (Blanton, 1983a, p. 221)

A general trend across highland Mesoamerica during the Terminal Formative (ca. 200 BC–AD 200, Monte Albán II in the Valley of Oaxaca) was increasing primacy and demographic nucleation, as population in many regions became more heavily concentrated in that region's largest settlement. The regional capitals of expansive states extended their domains, often transforming what had been poorly integrated frontiers into peripheries, politically and economically dependent in different ways on the associated centers of power. The relations between these large polities were competitive. At the same time, patterns in regional population trends were more variable than they had been during the Late Formative; some regions experienced population stasis or decline, even as some of the polities and metropolises centered in them expanded in power and influence.

Regional organization in the Basin of Mexico became much more complex than in prior eras, with more vertical differentiation in site hierarchies (Sanders et al., 1979, pp. 93–102; Hirth, 1980, pp. 36–38; Blanton et al., 1993, p. 115). Cuicuilco continued to be the dominant regional center in the southern Basin of Mexico at the same time that a new city—Teotihuacan—grew rapidly in the northern Basin of Mexico (Fig. 6.1; Sanders et al., 1979, p. 99). Both centers grew larger than any previous communities in the region, and early in the Terminal Formative period both may have had as many as 20,000 residents (Sanders et al., 1979, p. 99; Cowgill, 1992, p. 94; Blanton et al., 1993, pp. 115, 122), surpassing Monte Albán, in the Valley of Oaxaca. These two cities competed with each other and several smaller regional centers for territorial control until Cuicuilco declined and ultimately was abandoned (Hirth, 1978, p. 323; Sanders et al., 1979, pp. 103, 106; Cordova et al., 1994; Cowgill, 2000, pp. 259–260; Siebe, 2000). The defensive location of many Basin of Mexico settlements indicates that warfare likely was important in the process (Sanders et al., 1979, pp. 104–105; Cowgill, 1997, p. 145); volcanic and geothermal activity that affected the southern Basin of Mexico also may have contributed (Siebe, 2000; Plunket & Uruñuela, 2005, p. 100). With the decline of its principal rival, Teotihuacan expanded to become the dominant center in highland Mesoamerica, housing as many as 80,000 residents by the end of the Terminal Formative (Cowgill, 1979, p. 55, 1992, p. 95, 2004, p. 533; Millon, 1981, p. 221). The rapid population growth at Teotihuacan was fueled largely by in-migration from elsewhere in the region, especially the southern Basin of Mexico, which was largely depopulated (Cowgill, 1979, pp. 52–53; Sanders et al., 1979). This movement may have involved some coercion, in addition to the economic and civic-ceremonial attractions of the new city (Cowgill, 1992, pp. 95–97, 2000, p. 260), as Teotihuacan

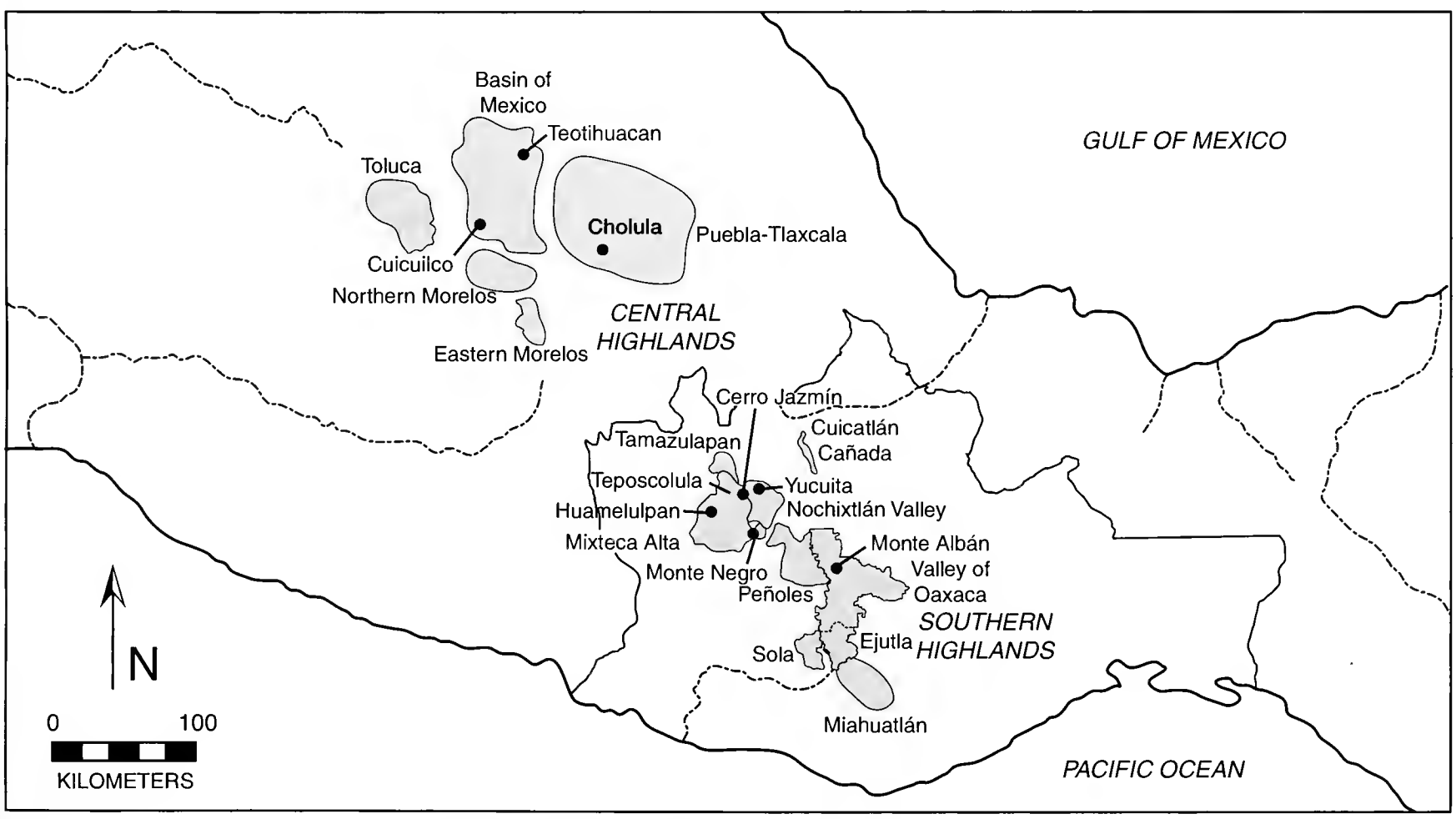



FIG. 6.1. Regions and sites in Oaxaca and central Mexico mentioned in the text.

resettled people from the countryside to foster productive activities and control (Hirth & Angulo Villaseñor, 1981, p. 136). The earliest construction at the city, a small platform at the base of the Pyramid of the Moon, was built during the first century AD (Sugiyama & Cabrera Castro, 2007; Cowgill, 2008, pp. 962–963; Sugiyama & Sarabia, 2011).

After Teotihuacan became the dominant center in the Basin of Mexico, it began to exert its influence/power not only in the basin but also beyond (Hirth, 1978, p. 323; Cowgill, 1992, p. 96). Nearby areas in northern Puebla-Tlaxcala, northern Morelos, and Toluca may have been loosely incorporated into Teotihuacan's sphere (Hirth, 1980, p. 92). In Puebla, Cholula began to emerge as one of the most important cities in the Central Highlands, in a process paralleling events in the Basin of Mexico (Plunket & Unuñuela, 2012, p. 32). The adjacent Amatzinac River valley in eastern Morelos had already lost its important role in central Mexico after the decline of Chalcatzingo during the Late Formative (Hirth, 1987, pp. 364–365). During the Terminal Formative, Teotihuacan-style ceramics began to appear in eastern Morelos, yet the region retained autonomy and was not yet brought under Teotihuacan control (Hirth, 1978, p. 323, 1980, pp. 54–55; Hirth & Angulo Villaseñor, 1981, pp. 143–145).

Even though Monte Albán lost some of its earlier population, the city continued to be the largest and architecturally most elaborate center in the Southern Highlands (Blanton et al., 1993, p. 84). Monumental construction was diversified and new forms of public buildings were erected (Marcus, 2009). The city's leadership began a period of imperialism that extended its domain to areas beyond the Valley of Oaxaca (Marcus, 1976, 1983b; Blanton et al., 1993, pp. 82–84; Feinman, 2007, p. 9). Pottery made near Monte Albán was encountered relatively rarely outside the central Valley of Oaxaca and adjacent areas during Late I (Blanton et al., 1993, p. 82). Yet select Monte Albán II (Terminal Formative) types, particularly distinctive crema wares that were made near the capital, are found in several distant places, including the Cañada de Cuicatlán (Fig. 6.1; Redmond & Spencer, 2006; Spencer, 2007), 100 km northeast of Monte Albán, including at one site that has been identified as a military outpost of Monte Albán (Spencer, 1982; Redmond, 1983; Blanton et al., 1993, p. 83). In Ejutla, crema pottery was much more abundant in Monte Albán II contexts than it had been earlier, especially at the region's largest settlements, also indicating increased interaction with Monte Albán and the valley's center (Feinman & Nicholas, 1990a, pp. 231–232). Crema ceramics also increased in abundance at the largest Monte Albán II site in the Sola Valley (Balkansky, 2002, p. 46).

Settlement in the Mixteca Alta was affected by the presence of these two powerful cities beyond its margins, even though neither city held control over the area. The population of the region as a whole declined, including areas (Tayata and Dzinacahua) that had significant settlement during the Late Formative. Other valleys were largely abandoned. But the places that did continue grew in population and organizational complexity. The population became much more concentrated in just a few valleys, including at Monte Negro in Tilantongo (Balkansky et al., 2004), around Yucuita in northern Nochixtlán (Spores, 1972; Plunket, 1983), at Cerro Jazmín, and in Teposcolula (Kowalewski et al., 2009, p. 299) and Tamazulapan (Byland, 1980). But the largest population concentration was in Huamelulpan and its hinterland (Balkansky, 1998b; Smith, 2002, p. 155; Kowalewski et al., 2009, p. 304), a valley that did not have significant prior settlement.

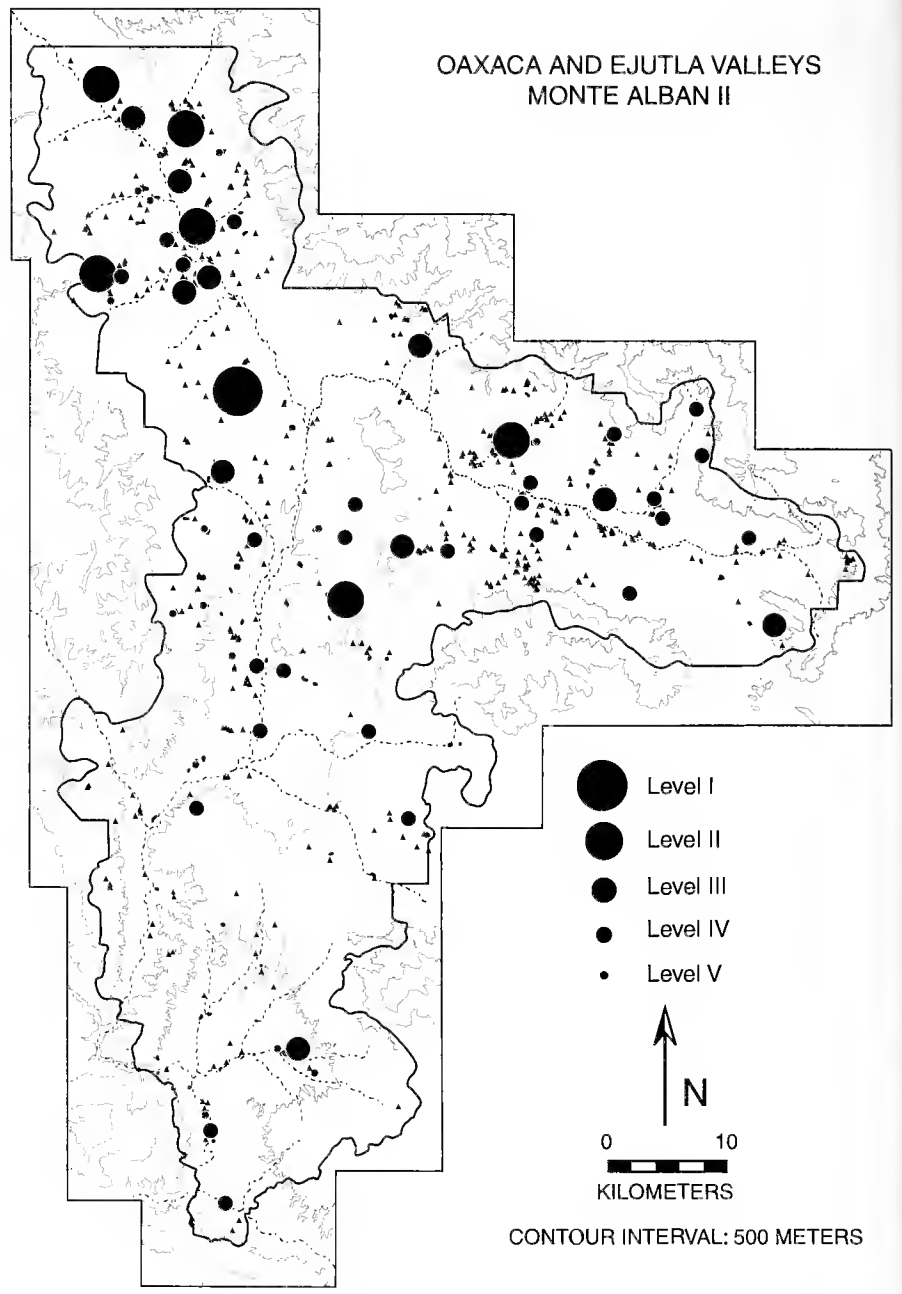



FIG. 6.2. Monte Albán II settlements in Ejutla and the Valley of Oaxaca, showing location of the largest centers.

The increasing nucleation of settlement in the Mixteca Alta around a few large centers would appear to be a defensive maneuver against the growing threat of Teotihuacan from the north and the imperialistic expansion of Monte Albán from the south. The presence of Zapotec writing at Huamelulpan (Marcus, 1983c) evidences greater Monte Albán influence in the Mixteca during the Terminal Formative. The first significant occupation of the mountainous Peñoles area between the Mixteca Alta and the Valley of Oaxaca dates to the Late and Terminal Formative (Kowalewski, 1991; Finsten, 1996). The pottery at the Peñoles sites includes many ceramics that are clear Valley of Oaxaca diagnostics (Finsten, 1996, p. 84). Similar changes in Cuicatlán include a major break with prior settlement patterns, population concentration in a few large settlements, more architectural elaboration, greater quantities of exotic Oaxaca-style pottery, and more fortified sites and other evidence of conquest (Spencer, 1982; Redmond, 1983; Spencer & Redmond, 1997, 2001b).

As Monte Albán was expanding its sphere of influence, the nature of its administration of the Valley of Oaxaca was changing. Intraregional interaction declined as the valley also lost population and the remaining population was more nucleated in a smaller number of large sites (Fig. 6.2; Kowalewski et al., 1989, p. 183; Blanton et al., 1993, p. 82). Competition/tension between Monte Albán and local elites may have increased (Kowalewski et al., 1989, p. 153) as well as between ruling groups at smaller centers. Yet even though

there were fewer centers, the basic depth of the settlement hierarchy did not change. The loss of centers occurred mostly in the bottom tiers; three-fourths of the smallest Late I centers were abandoned or lost considerable population (Kowalewski et al., 1989, p. 183). At the same time, the number of sites in the top levels of the hierarchy increased. Two-thirds of the Monte Albán II centers had had some prior civic-ceremonial role in Late I, yet unlike Monte Albán, over half of them were larger than they had been in Late I. The three largest (all tier II sites) were in Etla and defensibly located.

Rates of population change varied considerably across the Valley of Oaxaca (Feinman et al., 1985, table 2). The decline was greatest in areas closest to Monte Albán, greatly exceeding the loss at the capital itself (Feinman et al., 1985). The population south of Monte Albán, in the northern part of the Valle Grande, dropped by 40%. Tilcajete was relocated nearby on a more defendable hilltop and appears to have been completely incorporated into the Monte Albán polity (Elson, 2003, 2007, p. 18; Spencer & Redmond, 2004b).

Some areas of the valley that were occupied in Late I became largely (or entirely) uninhabited, creating small buffer zones between Monte Albán II settlement clusters (Kowalewski et al., 1989, p. 161). Thus, at the same time that architectural canons for temples and ballcourts were adopted across the Valley of Oaxaca and areas outside the region were conquered, tensions/competition between local and Monte Albán elites may have intensified (Kowalewski et al., 1989, p. 153), especially between the powerful at secondary and tertiary centers. One of these largely abandoned zones was at the southern edge of the Valley of Oaxaca, in southeastern Ocotlán, south of Tilcajete. Despite demographic decline, a few small centers either continued to be inhabited or grew in importance at this southern fringe (Kowalewski et al., 1989, p. 186).

Settlement and ceramic data indicate that Cuicatlán, Sola, and Ejutla (detailed below) were more interconnected into the Monte Albán system during the Terminal Formative than they had been before. Even though there was an increase in defendable sites in these areas, imported Oaxaca ceramics were found in each area, mostly at the largest sites. The population in these areas also was more concentrated in fewer, larger sites. These patterns suggest two possible responses to Monte Albán imperialism, both of which result in greater primate organization. One was a defensive mechanism by local groups to provide greater security. The other was an attempt by Monte Albán to centralize political functions in one large site so that it could more easily exert degrees of hegemony in relatively distant realms that were now more closely linked to the urban center.

## Monte Albán II Settlement in Ejutla

Changes in settlement patterns in the Ejutla Valley during the transition from Late I to Monte Albán II largely mirror those that occurred in the southern arm of the Valley of Oaxaca. Populations fell across the region but especially in the rural area around the capital and in northern Valle Grande. Demographic decline in Ejutla was only slightly less than in northern Valle Grande. Throughout the region, population was nucleated into fewer, larger centers. Farther south, the population in Sola dropped by almost half, with a similar concentration of population in fewer centers (Balkansky, 2002, p. 45).

TABLE 6.1. Population densities, component densities, and average site size in Ejutla and the Valley of Oaxaca in Monte Albán II.

| | Oaxaca | Ejutla | Oaxaca without Monte Albán |
|---|---|---|---|
| Population densities/km$^2$ | 19.7 | 4.2 | 12.9 |
| Component densities*/100 km$^2$ | 20.2 | 8.3 | 20.1 |
| Average site area* (ha) | 4.0 | 2.7 | 3.0 |
| Average site population* | 98 | 51 | 64 |

* Combined sites.

Population and site densities in the Ejutla region continued to be considerably lower than for the Valley of Oaxaca as a whole (Table 6.1). As in Late I, Ejutla was most similar demographically to the valley subregions at greatest distance from Monte Albán (southern Valle Grande and eastern Tlacolula; Fig. 6.3). In spite of lower site densities, however, average site size in Ejutla was within the range of all subregions in the Valley of Oaxaca (Table 6.2), including Central when Monte Albán is excluded.

In other respects, settlement changes during the transition from Late I to Monte Albán II were greater in Ejutla than Oaxaca. Monte Albán's expansion in Late I had led to more significant changes in settlement location in the Valley of Oaxaca than in Ejutla. In contrast, in Ejutla, at far remove from Monte Albán, more significant settlement changes occurred later, when Monte Albán was expanding its influence beyond the Valley of Oaxaca. For example, the decline in low piedmont locations and the spread onto higher, hilltop locations that occurred in the Valley of Oaxaca in Late I did not happen in the Ejutla region until Monte Albán II. These hilltop locations in Ejutla were still much smaller than similar sites in Oaxaca.

With the abandonment of many of the larger Late I sites, most of the Valle Grande and northern Ejutla were more sparsely populated than in Late I. The two Ejutla subareas that abut the Valle Grande accounted for only 3% of the Monte Albán II population, in an area where almost 30% of the Late I population had resided. Even the north-central

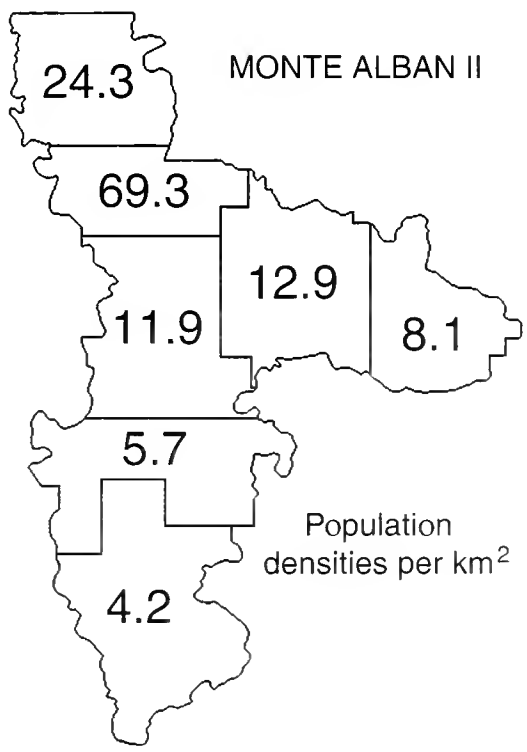



FIG. 6.3. Monte Albán II population densities in Ejutla and Valley of Oaxaca subregions.

Table 6.2. Number of sites, occupied area, and average site size for Ejutla and Valley of Oaxaca subregions in Monte Albán II.

| | No. of sites* | Occupied area (ha) | Average site size (ha) |
|---|---|---|---|
| Etla | 83 | 369.2 | 4.4 |
| Central | 51 | 580.4 | 11.4 |
| Central without Monte Albán | 50 | 164.2 | 3.3 |
| Northern Valle Grande | 67 | 292.5 | 4.4 |
| Southern Valle Grande | 46 | 97.9 | 2.1 |
| Western Tlacolula | 142 | 284.9 | 2.0 |
| Eastern Tlacolula | 39 | 77.0 | 2.0 |
| Ejutla | 43 | 114.5 | 2.7 |

* Combined sites.

subarea, which had been the most heavily occupied section of Ejutla since the Middle Formative, lost considerable population, dropping to 10% of the region's total in Monte Albán II. The proportion of the population in the central and southern subareas of Ejutla increased from 36% to over 85%.

The distribution of settlement in the two Late I settlement clusters in Ejutla changed dramatically. The northern Late I settlement cluster largely disappeared; the small sites scattered throughout that area accounted for just 12% of the Ejutla regional population compared to approximately 50% in Late I. In contrast, the southern cluster largely remained intact (Fig. 6.4), now accounting for 88% of Ejutla's population.

Although most small Late I centers in Ejutla either decreased in size or were abandoned, three strategically positioned Late I centers, all in the southern cluster, did increase in size and architectural elaboration. The two smaller and southernmost of these centers—Amatengo (II-39), on the Atoyac River, and Yogana (II-44), on the Miahuatlán River immediately before it joins the Atoyac and begins its descent to the Pacific Coast—reached their maximum extent in Monte Albán II. The third Monte Albán II center was the Ejutla site (II-16), in the middle of the Ejutla River drainage underneath the modern district head town; it grew to roughly twice the size of any prior Ejutla settlement or other contemporaneous community in this small valley. The earthen platforms at the site were some of the largest pre-Hispanic buildings ever erected in the Ejutla Valley, and they greatly exceeded any earlier construction in the area.

These and other settlement changes point to a significant shift in the organization of the Ejutla Valley and in the region's interconnection with the Valley of Oaxaca and Monte Albán. The decreased number of small hamlets in northern Ejutla and southern Valle Grande would seem to indicate a drop-off in the kinds of horizontal communications that occurred earlier between households and small settlements along a more open frontier. Instead, for the first time, several Ejutla sites—EJ-EJ-SMC-6 (II-1, in grid square N2E6) and EJ-EJ-EV-2 (II-3, in grid square N1E7)—were positioned in defendable hilltop locations. Unlike later defendable localities that tended to face outside the Ejutla Valley, these small Monte Albán II sites were inward looking. They were situated in the middle piedmont at the northern edge of the previous Late I settlement cluster in north-central Ejutla overlooking lower piedmont and alluvial areas of the principal Ejutla tributaries. More specifically, these elevated communities were placed to overlook the most direct route between Monte Albán and the large Ejutla site (II-16).

## Public Architecture

Monte Albán II ceramics were present on at least one mound at 13 sites in Ejutla (Table 6.3). The total mound volume is 129,427 $m^3$, over half of which is at the Ejutla site (II-16). Only seven of these sites have two or more mounds at least 1 m tall. In this section, we discuss these seven sites and two additional ones with single-component Monte Albán II architecture (see Appendix VIII for descriptions of the other sites).

There are only two structures in the Ejutla region that are single-component Monte Albán II. Both are lower than 1 m (one may be a house foundation), with a total mound volume of only 28 $m^3$. The low mound is at a single-component site, EJ-EJ-SCN-11 (II-19), but the house foundation is one of two structures (both occupied in Monte Albán II) at a small site, EJ-LC-LC-13 (II-21), that also has a Monte Albán V component. No plazas or other architectural features are single-component Monte Albán II. The architecture at these two sites is clearly not representative of most contemporaneous structures in Ejutla; the size of this sample is small because of the strong continuity of occupation at sites with architecture. Almost half (6 of 13) of the Monte Albán II sites with architecture were occupied in both Late I and IIIA, and these generally are the sites with the highest number of mounds.

Monte Albán II ceramics were recorded on all mounds at three of the most architecturally complex sites in the surveyed area—the Ejutla site (II-16; Figs. 6.5–6.9 and Appendix IX, Fig. 6), Amatengo (II-39; Appendix IX, Fig. 33; see also Fig. 5.17), and Yogana (II-44; Appendix IX, Fig. 43; see also Fig. 5.16). All three were large in Late I, and the Monte Albán II occupation at each settlement expanded in size. Architectural constructions that may have begun at each site in Late I were enlarged during Monte Albán II. The sites also continued to have large populations during the subsequent phase (IIIA), and some continued construction also may have occurred then. At the Ejutla site (II-16), however, observations of and collections from mound fill revealed that the major construction of the mounds occurred during Monte Albán II. The total mound volume at the Ejutla site is approximately 80,000 $m^3$, more than four times the estimated volume of the constructions at the other two large sites.

Architectural layouts at three other sites that have small groups of two to five mounds (all 1 m or taller) appear basically unchanged from Late I (see discussion in Chapter 5), and their populations did not grow between the two phases. The mounds at two sites, Chichihualtepec (II-2; Appendix IX, Fig. 23; see also Fig. 4.8) and La Labor (II-26; Appendix IX, Fig. 30), likely were constructed in Late I (or earlier in the case of Chichihualtepec), although they may have been enlarged during Monte Albán II. The population of the third site, EJ-EJ-SJ-10 (II-12, Appendix IX, Fig. 21), was much smaller in Monte Albán II than in Late I, so it is possible that no additional construction occurred at that site. All three sites were either abandoned after Monte Albán II or had smaller populations in the subsequent phase.

Monte Albán II ceramics were present on only two of seven dispersed mounds at Mogote de las Azucenas (II-1; Appendix IX, Fig. 22), a hilltop terraced site that was much larger in Monte Albán IIIA. No Monte Albán II ceramics were found on any of the terraces. It is possible that the mounds were not constructed until Monte Albán IIIA and that ceramics from a

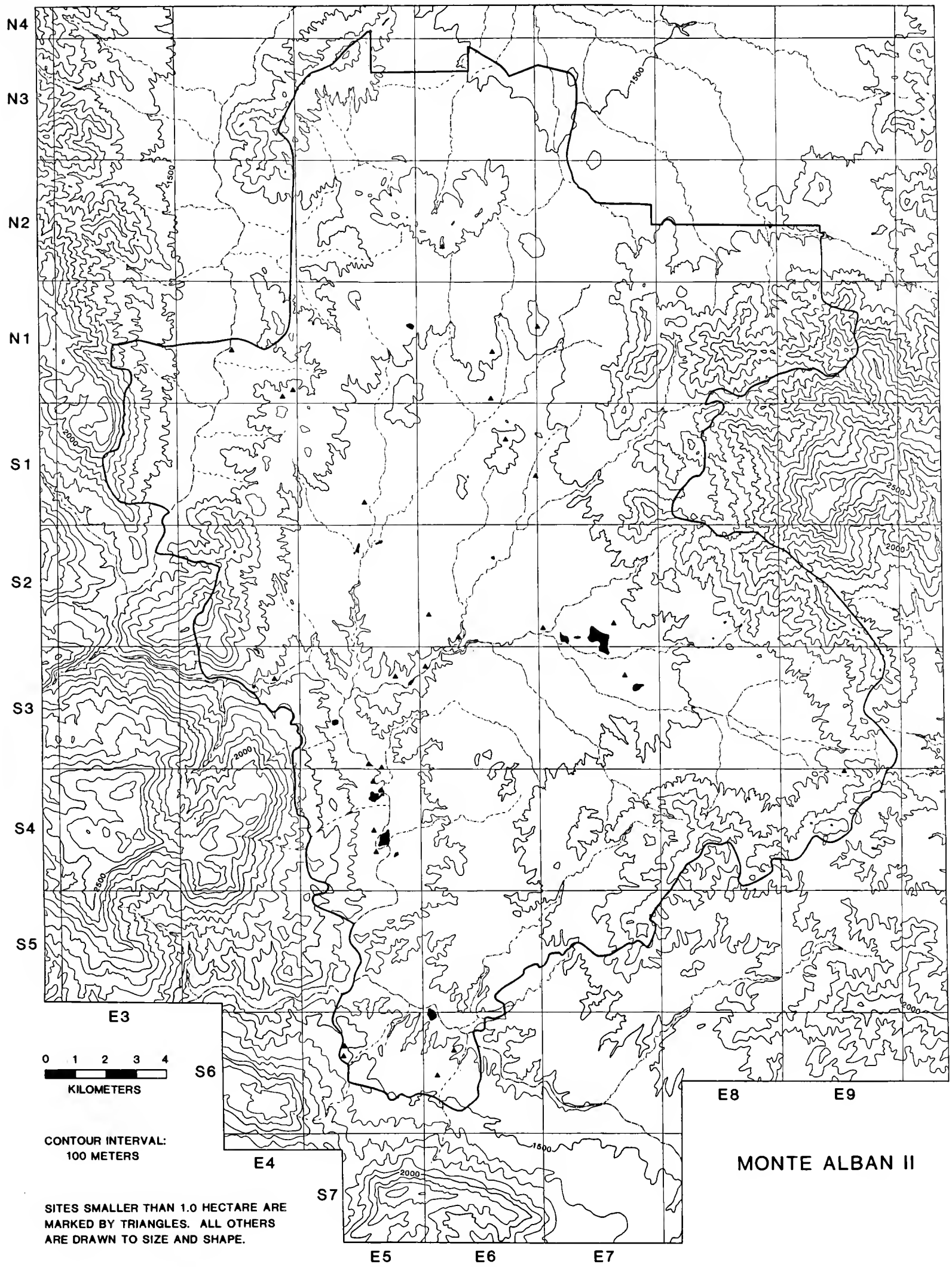



FIG. 6.4. Monte Albán II settlement in the Ejutla Valley.

very small earlier occupation were incorporated in the fill of the structures.

There are fewer plazas at Monte Albán II sites than at earlier sites. Yet compared to the definite Late I plazas, the more closed nature of the later plazas at Yogana (II-44) and Amatengo (II-39) indicate a more hierarchical and formal organization than in earlier phases (modern building made this impossible to access at the Ejutla town site). Overall, access may have been limited at half of the Monte Albán II plazas in the Ejutla Valley, as three of the six plazas were

TABLE 6.3. Monte Albán II sites in the Ejutla Valley survey region with populations over 50, mounds, terraces, and/or ceramic collections.

| | Site no. and name | Grid square | Population | No. of mounds <1 m | No. of mounds ≥1 m | Mound volume ($m^3$) | No. of ceramic types | No. of cremas | Crema % of ceramic assemblage |
|---|---|---|---|---|---|---|---|---|---|
| 1 | EJ-EJ-SMC-6 (M. de las Azucenas) | N2E6 | 15 | 0 | 2 | 375 | 2 | 0 | 0 |
| 2 | EJ-EJ-SMC-7 (Chichihualtepec) | N1E5 | 61 | 0 | 3 | 4,026 | 33 | 27 | 21.4 |
| 3 | EJ-EJ-EV-2 | N1E7 | 9 | 0 | 0 | 518 | 2 | 0 | 0 |
| 4 | EJ-EJ-EV-14 | N1E6 | 10 | 0 | 0 | 0 | 7 | 0 | 0 |
| 5 | EJ-LP-LG-3 | S1E5 | 8 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | EJ-EJ-SMC-1 | N1E6 | 10 | 0 | 0 | 0 | 13 | 2 | 3.5 |
| 7 | EJ-EJ-SJ-6 | S1E6 | 8 | 0 | 0 | 0 | 2 | 0 | 0 |
| 11 | EJ-LC-AE-1 | S2E5 | 52 | 0 | 0 | 0 | 4 | 0 | 0 |
| 12 | EJ-EJ-SJ-10 | S2E6 | 19 | 0 | 5 | 1,647 | 6 | 0 | 0 |
| 13 | EJ-TAN-TAN-1 | S2E7 | 8 | 0 | 0 | 0 | 3 | 1 | 14.3 |
| 14 | EJ-EJ-EJ-1/TAN-TAN-1 | S2E7 | 125 | 0 | 0 | 0 | — | — | — |
| 16 | EJ-EJ-EJ-1 (Ejutla) | S2E7 | 646 | 0 | 12 | 80,000 | 30 | 12 | 16.0 |
| 18 | EJ-EJ-SCN-18 | N1E4 | 16 | 0 | 0 | 0 | 6 | 0 | 0 |
| 19 | EJ-EJ-SCN-11 | N1E4 | 8 | 1 | 0 | 28 | — | — | — |
| 21 | EJ-LC-LC-13 | S3E4 | 9 | 2 | 0 | 10 | 3 | 1 | 33.3 |
| 23 | EJ-TAN-TAN-2 | S2E6 | 8 | 0 | 1 | 775 | — | — | — |
| 24 | EJ-LC-LC-7 | S3E4 | 18 | 0 | 0 | 0 | 3 | 1 | 33.3 |
| 26 | EJ-LC-LL-1 (La Labor) | S3E5 | 62 | 0 | 2 | 1,000 | 5 | 1 | 7.1 |
| 31 | EJ-SAA-SAA-10 | S4E5 | 164 | 0 | 1 | 608 | 12 | 17 | 63.8 |
| 32 | EJ-TAN-TAN-2 | S3E6 | 8 | 0 | 0 | 0 | 10 | 4 | 26.7 |
| 33 | EJ-TAN-TAN-2 | S3E5 | 12 | 0 | 0 | 0 | 9 | 2 | 9.0 |
| 34 | EJ-LC-RE-3 | S3E5 | 13 | 0 | 0 | 0 | 3 | 1 | 20.0 |
| 35 | EJ-EJ-EJ-42 | S3E7 | 109 | 0 | 1 | 15,155 | 14 | 1 | 2.0 |
| 38 | EJ-SAA-SAA-6 | S4E5 | 8 | 0 | 0 | 0 | 9 | 4 | 40.0 |
| 39 | EJ-SAA-SAA-15 (Amatengo) | S4E5 | 267 | 1 | 9 | 17,105 | 28 | 12 | 15.4 |
| 43 | EJ-YO-YO-5 | S6E5 | 8 | 0 | 0 | 0 | 5 | 1 | 12.5 |
| 44 | EJ-YO-YO-12 (Yogana) | S6E6 | 332 | 3 | 7 | 8,185 | 26 | 23 | 21.3 |

enclosed by three or four mounds. Three of the plazas are at one site, Amatengo (II-39). The plan at Amatengo was especially formal, with very limited access to two of the plazas. As noted above, some additional construction may have occurred at the site during Monte Albán IIIA; however, the basic plan of the site appears to be have been established in Monte Albán II. Plaza A was defined by platforms on the south and west sides that each supported two additional structures; single structures defined the north and east sides. Plaza B was located on top of Platform 1 and was defined by walls on the south and east (a small mound in the southeast connects the two walls) and mounds on the north and west. Plaza C was more open, with two platforms defining the north and east sides of the plaza. Another area at the edge of the mound complex that is not clearly defined as a plaza is enclosed on three sides, including a low wall on the east. The other site with a limited-access plaza is Yogana (II-44), where a four-mound group encloses Plaza A, with a small entryway in the northwest corner. The other two plazas at Yogana that

FIG. 6.5. Structure 1 at the Ejutla site (EJ-EJ-EJ-1), inside houselot and visible from the street. It is one of the tallest mounds at the site.

FIG. 6.6. Visible plaster floors in Structure 2 at the Ejutla site.

FIG. 6.7. Remains of Structure 4 at the Ejutla site.

may pertain to Monte Albán II both have only two mounds and are relatively open. Given the site's location at the southern boundary of Ejutla's settlement system, it likely was an important node for interaction/integration with areas to the south.

Thus the Monte Albán II occupation of Ejutla, when Monte Albán began a more concerted effort to incorporate the area into its political system, built on the larger Late I mounded sites and incorporated them into a more hierarchical system, whereas smaller mounded sites were abandoned. The largest settlement, the Ejutla site, was at the region's center and adjacent to the Ejutla River. The next two largest sites, each with formal architecture, sat adjacent to (and overlooking) the Atoyac River (Amatengo) and the Miahuatlán River (Yogana). No new large Monte Albán II sites were constructed in areas that had not been occupied in Late I.

## Hierarchy

Greater nucleation of the population in fewer settlements occurred in the Ejutla Valley just as in the Valley of Oaxaca between Late I and Monte Albán II. In the latter region, the number of sites with populations greater than 100 dropped from 74 in Late I to 52 (Kowalewski et al., 1989, pp. 128, 185)

FIG. 6.8. Visible stone construction and plaster floors in Structure 7 at the Ejutla site.

FIG. 6.9. Visible plaster floors in small remaining remnant of Structure 8 at the Ejutla site.

at the same time that the number of sites with populations over 400 stayed the same. The number of sites in Ejutla with populations over 100 decreased from 11 in Late I to only six. Although more than half of the Late I population centers in Ejutla were either abandoned or declined in population, four of the six Monte Albán II population centers had a comparable status in Late I.

Even though the number of sites (and population) decreased, the site hierarchy in Ejutla was more tiered or developed, with a new level added at the top (Table 6.4). With more than 600 people, the Ejutla site (II-16) was in a rank of its own, equivalent to a Rank III center in the Valley of Oaxaca (Fig. 6.10). There were no comparable population centers in southern Valle Grande, although there were in northern Valle Grande (Fig. 6.2). Amatengo (II-39) and Yogana (II-44) form the second level (Rank IV) in Ejutla, with populations about half that of the Ejutla site. In the Valley of Oaxaca there continued to be five levels of centers. In both valleys, there was a decrease in the number of sites in at the lowest level of the hierarchy.

There also was a corresponding increase in the mound hierarchy in Ejutla. Although without excavation we cannot know if there were one or two levels of sites with more than one mound during Late I, in Monte Albán II, there definitely were at least two (and probably three) levels above the smallest sites with only one or no mounds (Table 6.5). In contrast, there continued to be five levels (not including sites with only one or no mounds) in the Valley of Oaxaca mound hierarchy, although the number of mounds in the top two levels increased (Kowalewski et al., 1989, p. 191). The bottom three levels remained essentially the same. The Ejutla Valley sites with mounds conform to the bottom three tiers (III-V) in Oaxaca; however, the three Monte Albán II sites in Ejutla with the most architecture continued to have large occupations in IIIA, and the number of mounds dating to prior phases could be overestimated.

TABLE 6.4. Monte Albán II population hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| Level | Population | No. of sites | Population | No. of sites |
| I | 14,492 | 1 | — | — |
| II | 979–1,947 | 6 | — | — |
| III | 387–727 | 9 | 646 | 1 |
| IV | 180–343 | 24 | 267–332 | 2 |
| V | 101–161 | 14 | 109–164 | 3 |
| No rank | 8–96 | 374 | 8–62 | 37 |

TABLE 6.5. Monte Albán II mound hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| Level | Mounds | No. of sites | Mounds | No. of sites |
| I | ? | 1 | — | — |
| II | 19–41 | 4 | — | — |
| III | 9–16 | 12 | 9–12 | 2 |
| IV | 5–8 | 24 | 5–7 | 2 |
| V | 2–4 | 41 | 2–3 | 3 |
| No rank | 0–1 | 346 | 0–1 | 36 |

In Monte Albán II the overlap of sites positioned at the top of the population and mound hierarchies in the Ejutla region is greater than in prior phases; the three sites at the top of the population hierarchy—the Ejutla site (II-16), Amatengo (II-39), Yogana (II-44)—are the same three sites at the top of the mound hierarchy. This pattern does not continue for the lower levels of the hierarchies, where several sites in the mound hierarchy have populations of less than 20 people. What seems clear is that power was concentrated in the three largest centers, with sites in the lower levels of the hierarchy engaged in fewer civic-ceremonial activities.

The distribution of the smaller mound centers also changed between Late I and II, especially in the northern part of Ejutla. Only two small mound centers continued from Late I, while a new mound center was situated on a defendable location in northern Ejutla. In contrast, the three largest Monte Albán II sites (the Ejutla site, Amatengo, and Yogana) are the same as in Late I; all are situated near rivers in the southern half of the Ejutla region (Fig 6.11).

The distribution of Level II mound centers was not even across the Valley of Oaxaca (Fig. 6.12), continuing the earlier Late I pattern. Although there were two each in Etla and the Valle Grande, there were none in Tlacolula or Ejutla. There were, however, several Level III mound centers in Tlacolula and possibly in Ejutla, and those centers may have had civic-ceremonial functions similar to the larger Level II centers in Etla and the Valle Grande. The presence of Level II centers in the Valle Grande (there were none in Late I) and the first Level III sites in Ejutla would seem to signal Monte Albán's spreading influence/interest in southern parts of the valley, including Ejutla (and Miahuatlán). These large centers, often with formal architectural groupings, were the nodes through which the rulers appear to have managed and integrated the southern extension of the expanding Monte Albán system.

## Ceramics

The changing distribution of crema pottery in Ejutla between Monte Albán I and II points to a shift in the nature of interactions between Ejutla and the Valley of Oaxaca. The few definitive Monte Albán I cremas in Ejutla were distributed rather randomly (at sites of different size and location). In contrast, as we detail below, the temporally specific and highly decorated Monte Albán II cremas were much more abundant, especially at the region's larger sites (the Ejutla site and the two well-positioned gateways in the south, Amatengo and Yogana), indicating increased interaction and a more direct channel of communication between Monte Albán (and the valley's center) and these Ejutla centers (than had existed earlier; Feinman & Nicholas, 1990a, pp. 231–232). Crema ceramics also increased in abundance at the largest Monte Albán II site in the Sola Valley (Balkansky, 2002, p. 46).

Change in the correlation between settlement population and the number of ceramie types per site is another indicator of shifting interactions between Ejutla and Oaxaca. The eorrelation between settlement population and types/site ($r$ =

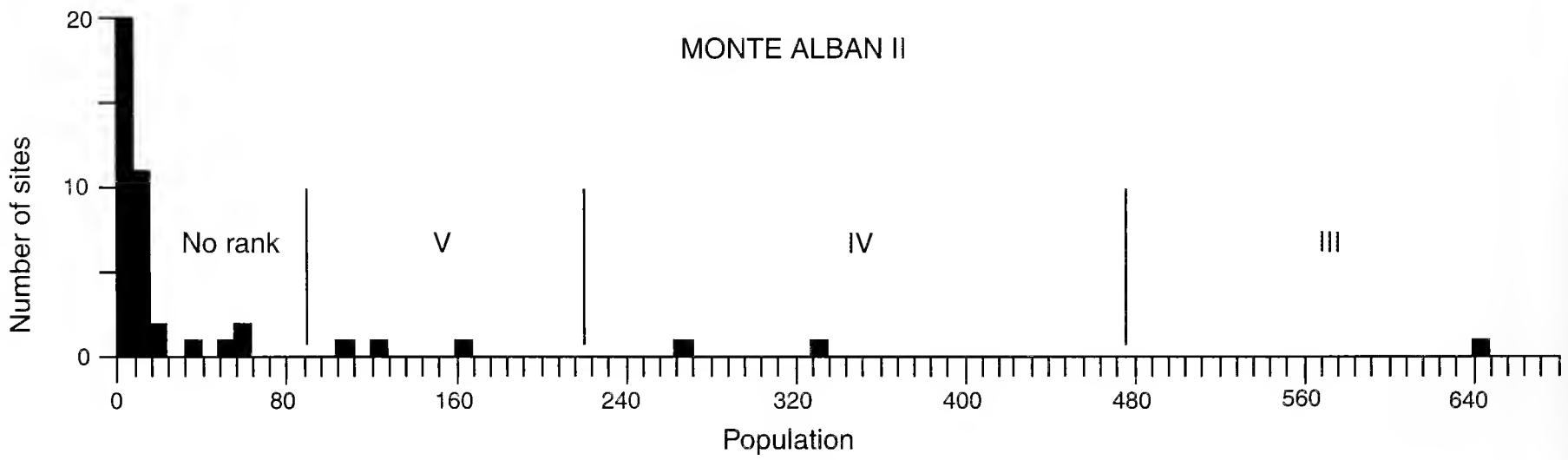



FIG. 6.10. Monte Albán II population histogram for Ejutla.

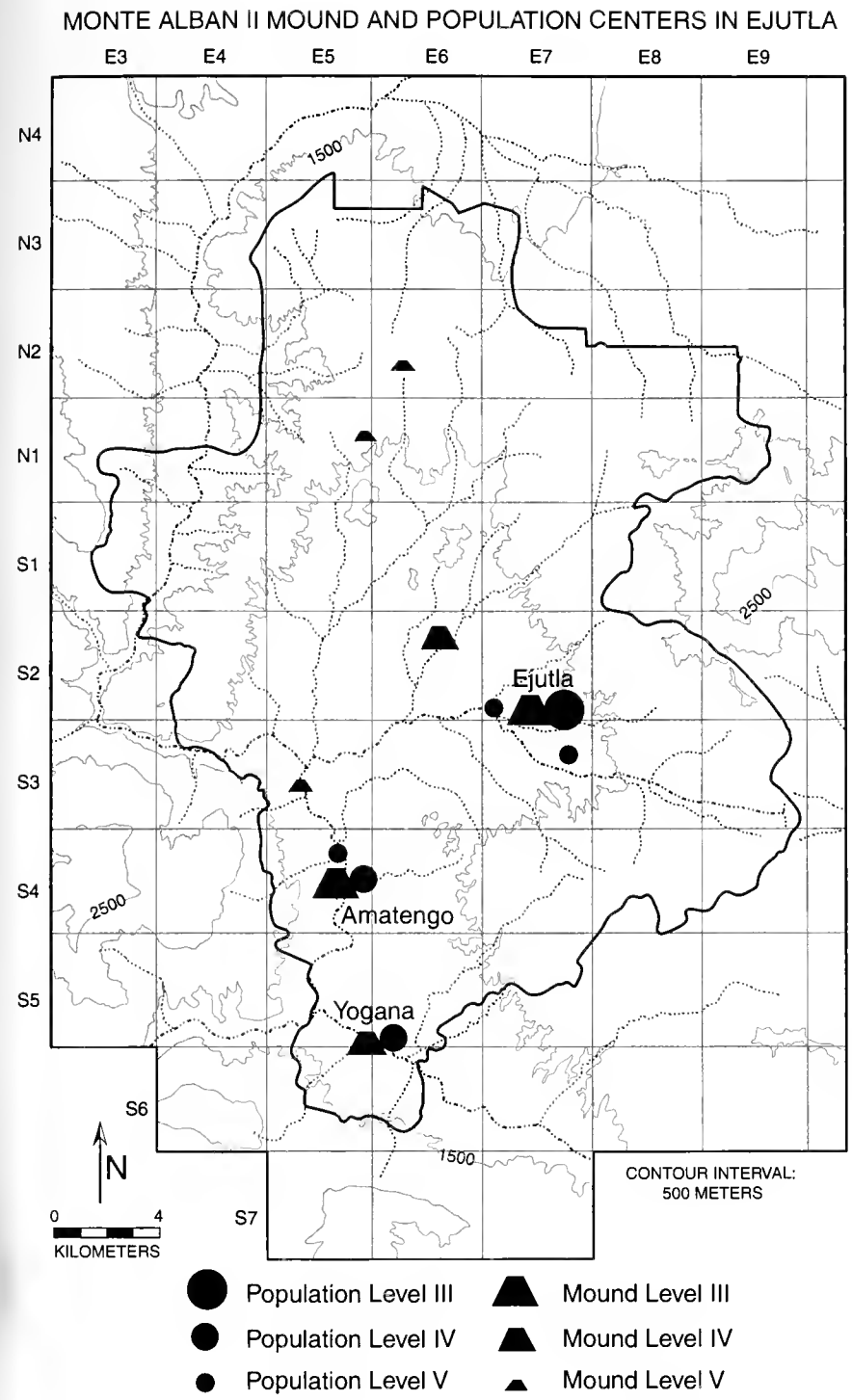



FIG. 6.11. Monte Albán II mound and population centers in Ejutla.

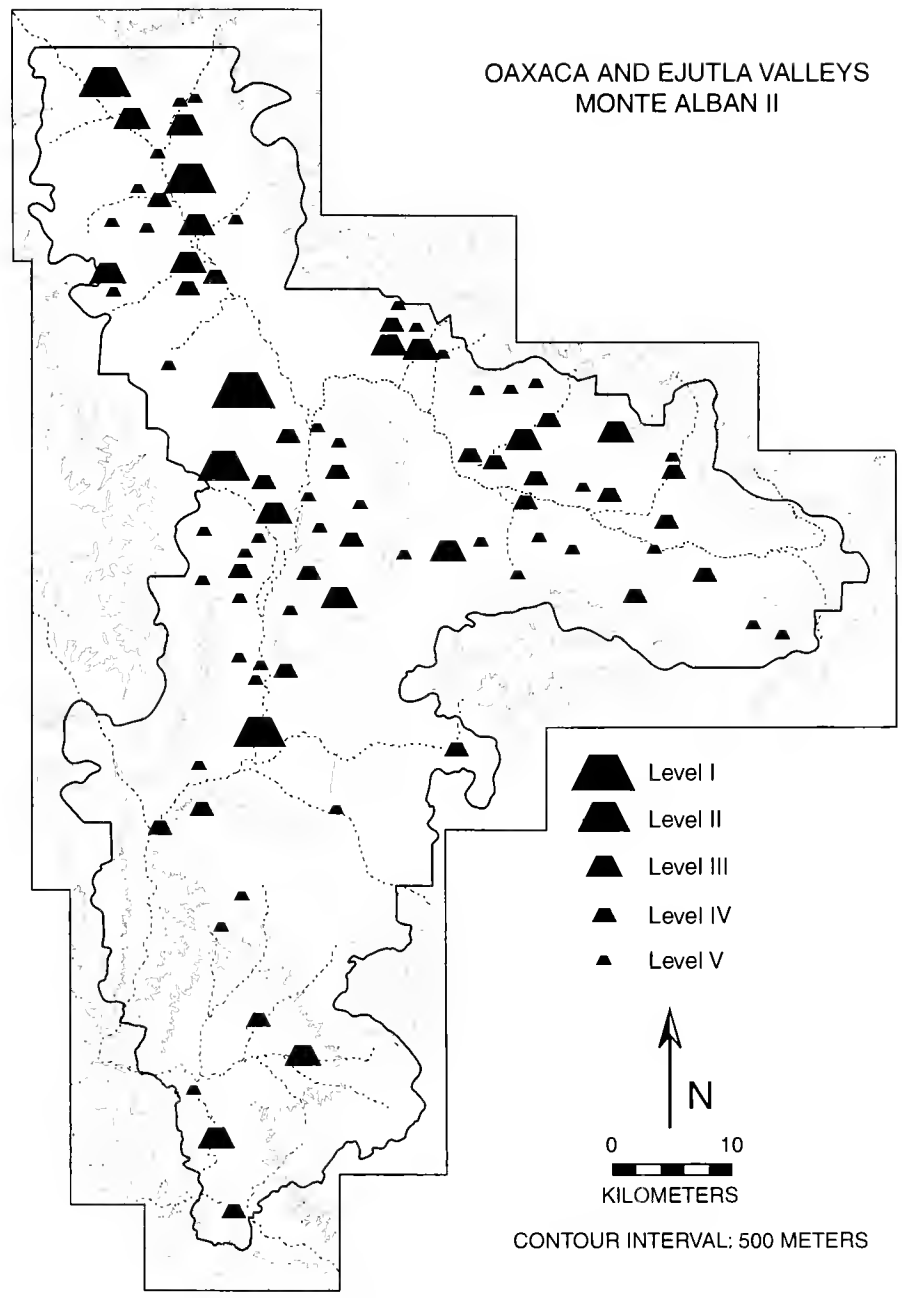



FIG. 6.12. Monte Albán II mound centers in Ejutla and the Valley of Oaxaca.

.73) was stronger for Monte Albán II than at any other time in the sequence. The three major centers in Ejutla average 28 ceramic types, more than three times the mean for all sites of the phase. Simple proximity to the Valley of Oaxaca was not the determinative factor that it had been earlier, as sites in northern Ejutla actually had less ceramic variety than settlements in the south.

**Ceramic Distributions**

The total amount of crema pottery (decorated and undecorated) in the overall ceramic assemblage in the Ejutla Valley more than doubled from Late I to Monte Albán II (Table 5.1). The overall proportion of café pottery remained the same as in Late I (39%), while the preponderance of gris pottery dropped to a comparable level (38%). Not only was crema pottery present at twice as many sites (35% in Monte Albán II compared to 17.5% in Late I), but its distribution changed significantly from earlier periods. Cremas continued to be concentrated at sites in southern Ejutla (Fig. 6.13); however, in Monte Albán II, the largest sites (and the most architecture) tended to have the highest amounts of crema ceramics. This relationship between quantity of crema pottery and site size was more evident than in Late I.

Crema ceramic types are not evenly distributed across the region. Red-painted crema bowls (such as T0001, T0002, and T0057) that are most abundant in Etla and Central (including Monte Albán) and rarer in the valley margins (southern Valle Grande and eastern Tlacolula; Kowalewski et al., 1989, pp. 167–169) are even less abundant in Ejutla. In contrast, several rare types are found in comparable frequencies in both valleys. One of these types (a bowl with a black slip [T0380]) that is found mostly in the central and northern part of the Valley of Oaxaca (Kowalewski et al., 1989, p. 165) is abundant at Chichihualtepec (II-2). Elaborately decorated C-11 bowls (T0004) also are rare, with a very spotty distribution across the Valley of Oaxaca (Kowalewski et al., 1989, p. 168). Whereas Etla has twice as many as any other subregion (17), all other subregions, including Ejutla, have comparable amounts (between five and eight). In Ejutla, half are found at Chichihualtepec. Distribution apparently was not based only on distance factors. In Ejutla, the distribution of the most common crema types varies considerably between the four major sites (Amatengo, Yogana, the Ejutla site, and Chichihualtepec). The pattern of crema distribution, in general, appears related to interaction between elites at specific sites,

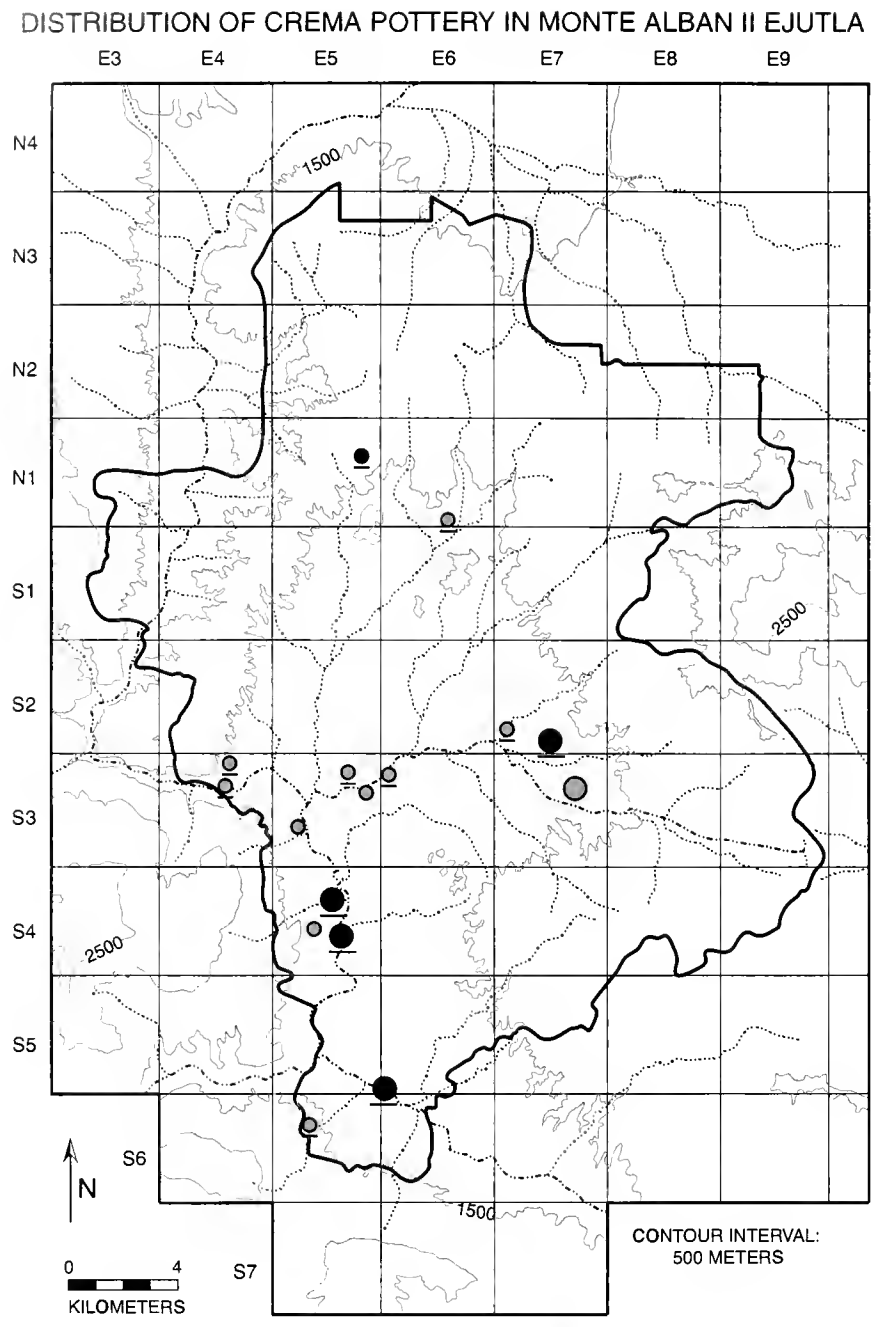



FIG. 6.13. Distribution of crema pottery in Ejutla in Monte Albán II.

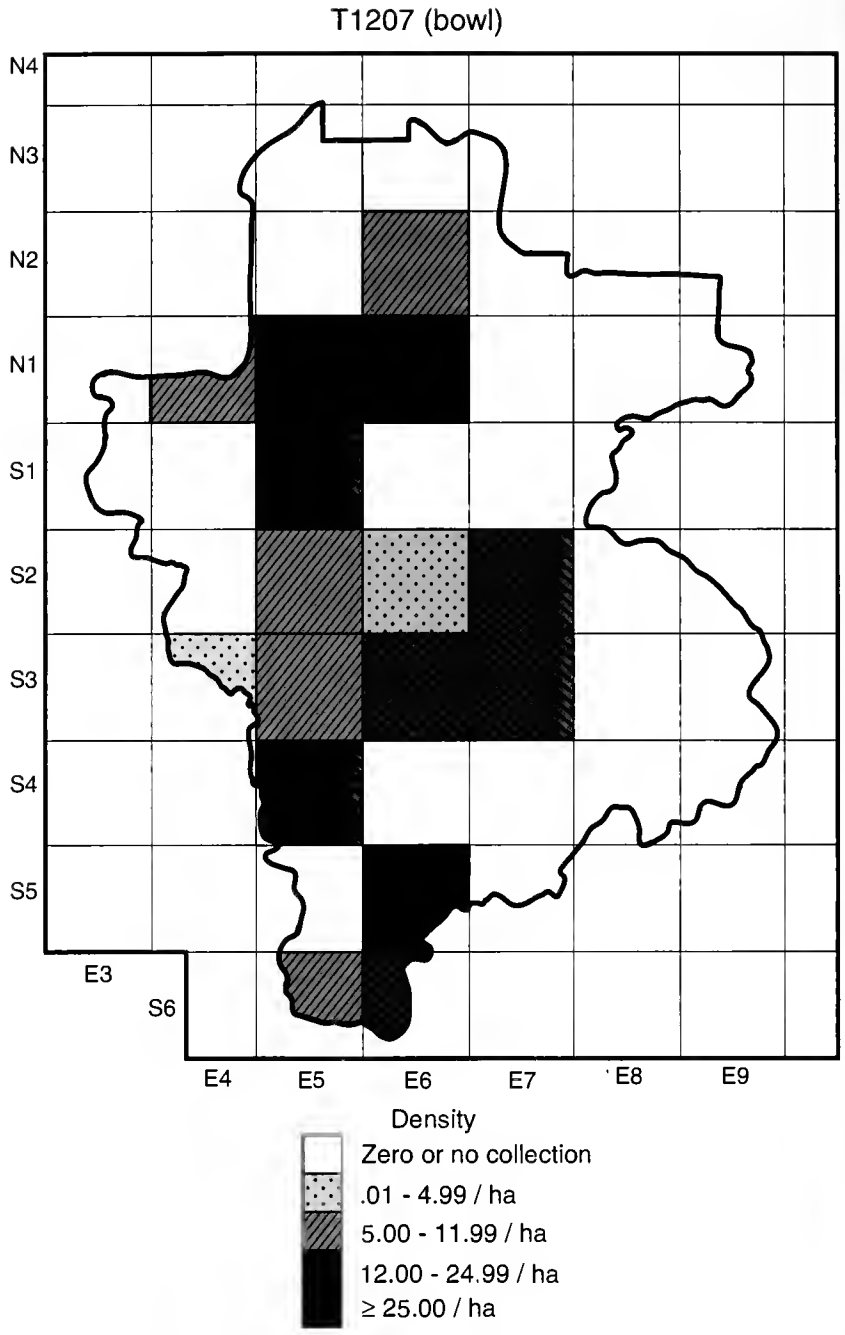



FIG. 6.14. Distribution of G-12 bowls (T1207) in Ejutla in Monte Albán II.

with nearby smaller sites getting very little if any crema pottery.

G-12 bowls (T1207), which were the most common ceramic type in the Valley of Oaxaca (Kowalewski et al., 1989, p. 165) and in Ejutla, were more evenly distributed than crema pottery (Fig. 6.14). Another gris type, G-21 combed bottom bowls (T1194), also is fairly evenly spread across Oaxaca (Kowalewski et al., 1989, p. 168). In contrast, its distribution in Ejutla is very uneven (Fig. 6.15) and does not conform at all to the distribution of the G-12 bowls. Over half (14 of 26) of the T1194s recorded during the survey are from Chichihualtepec; the remaining ones are dispersed in low quantities at sites in southern Ejutla.

One very rare gris type (T1419; G-4 white rim black bowl) that was recorded mostly in the Valle Grande and Monte Albán (Kowalewski et al., 1989, fig. 7.7) was not present at all in Ejutla. Two other gris bowls (T1227 and T1241) that occur in low frequencies in all Oaxaca subregions, however, were recorded in similar frequencies in Ejutla.

Whereas crema pottery was more abundant in Etla and the Central subregions, café ceramics are generally more frequent in the Valle Grande and Tlacolula. Many café types (especially T2013 jars) are also quite common in Ejutla. Café jars with curved-back necks (T2013A), which are especially abundant in the Valle Grande, are also very abundant in Ejutla. Two other café bowls (T2052 and T2416) occur in frequencies in Ejutla that are similar to those in southern Valle Grande and Tlacolula. One type (T2414; K-5 bowl with graphite slip) that is rare in the valley (and at Monte Albán as well) is present mainly in scattered contexts in southern Valle Grande and Tlacolula. It occurs in fairly high frequencies in northwestern Ejutla and at Chichihualtepec (II-2), with only one or two pieces at a few sites to the south.

Overall, amarillo pottery is present in Ejutla in low frequencies. By far, the most common are A-9 bowls (T3408). These red-painted bowls are most abundant in northern Valle Grande and western Tlacolula; the lowest frequencies occur in Etla (Kowalewski et al., 1989, pp. 168–169). The frequencies in Ejutla are comparable to those in southern Valle Grande and eastern Tlacolula, again showing some falloff with distance from the area of greatest abundance, northern Valle Grande. As with crema pottery, the A-9s in the Ejutla region are most common at large sites with architecture and at Chichihualtepec (Fig. 6.16).

Only a few Dainzú bowls (T3500), which are most common in the southern and eastern portions of Oaxaca, especially Tlacolula (Kowalewski et al., 1989, p. 165), were found in

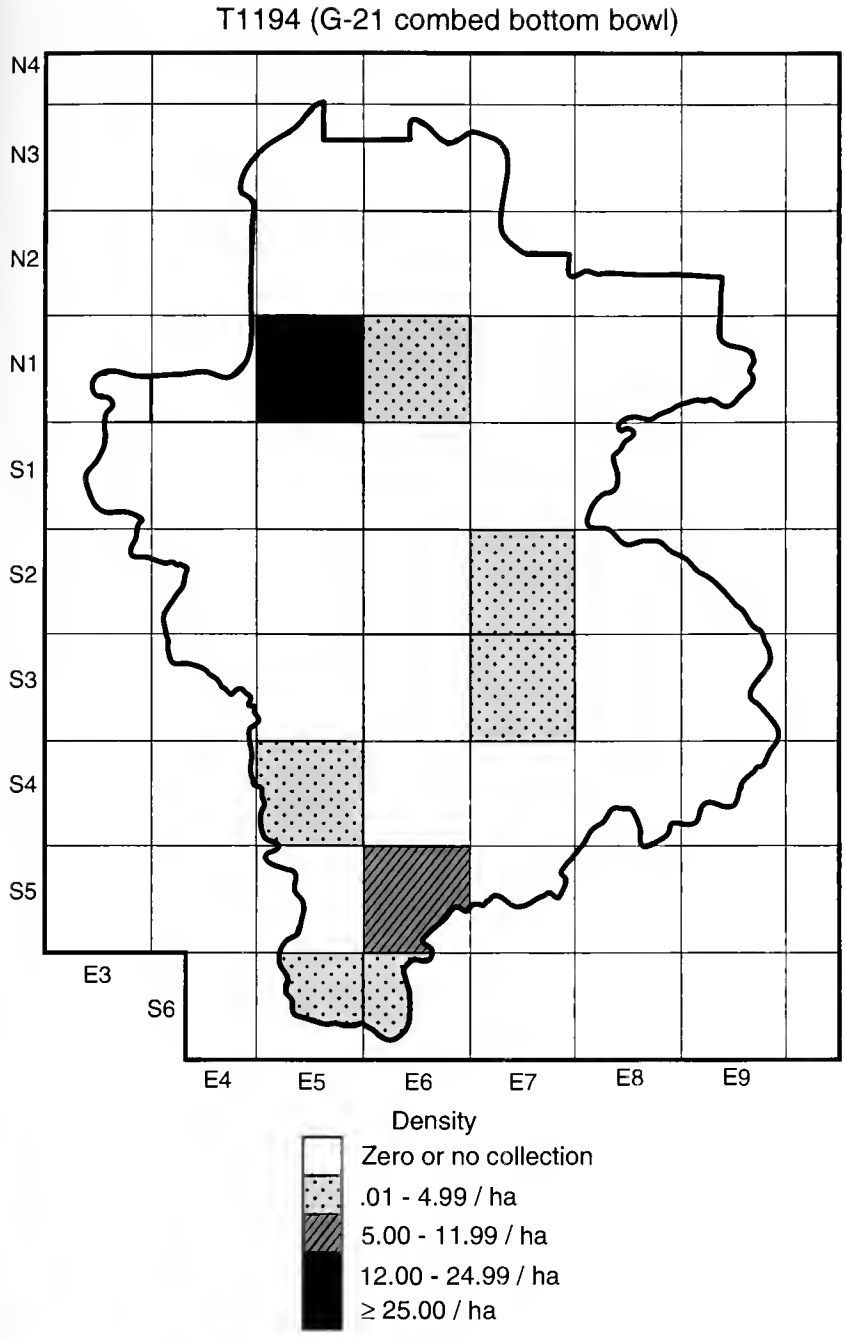



FIG. 6.15. Distribution of G-21 combed bottom bowls (T1194) in Ejutla in Monte Albán II.

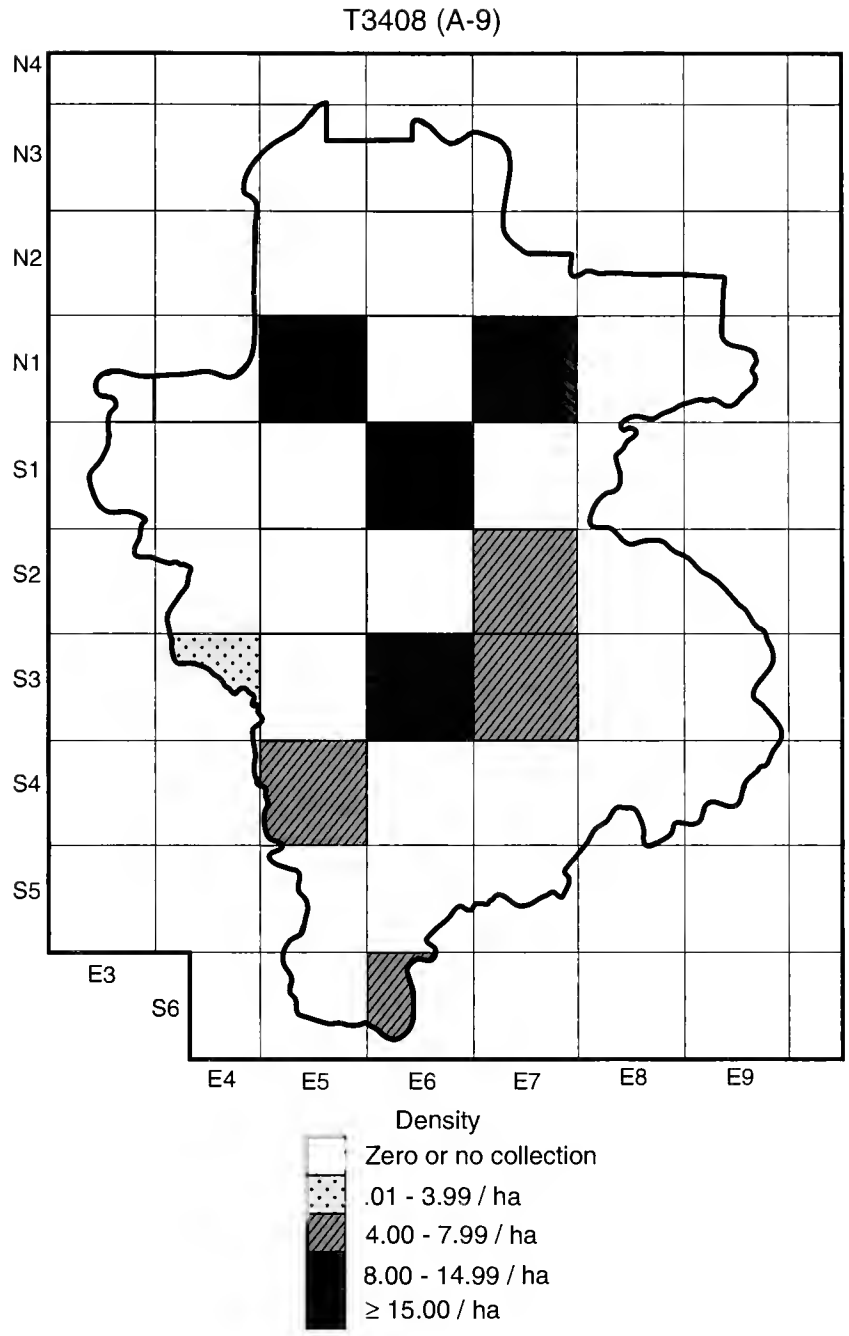



FIG. 6.16. Distribution of A-9 ceramics (T3408) in Ejutla in Monte Albán II.

Ejutla. All occur at one midsize site with architecture in western Ejutla. Also, a few highly decorated black-and-white bowls (T5100), which occur mostly in eastern Tlacolula (none have been recorded at Monte Albán), were found at several widely dispersed sites in Ejutla, all on or very near the Atoyac River. Again, these patterns show very selective distribution/exchange arrangements between different groups of elites.

Finally, we consider the set of six fairly common fancy ceramic types that are generally limited to Monte Albán II (T0001, T0002, T0004, T0057, T1194, and T3408; Kowalewski et al., 1989, pp. 165–171). In Ejutla, these types are overwhelmingly present at sites with mounds, and very few pieces are found at other, smaller sites. All six types occur at Chichihualtepec (30 pieces). Five of the six types are present at the Ejutla site and Amatengo (with 11 pieces each), and four occur at Yogana (13 pieces). Two of the six types (eight pieces) are present at EJ-EJ-EJ-42 (II-35).

In sum, many of the ceramic patterns we see in Ejutla are similar to those in southern Valle Grande; many types common in that subregion also are fairly common in Ejutla. Rarer types that appear in high-status contexts throughout the Valley of Oaxaca also are found in isolated, high-status contexts in Ejutla. These two patterns indicate increasing interaction, at least through elite networks, with Oaxaca. The wide variation in assemblages at the largest sites conforms with a network in which there were different connections for the elites at each secondary or tertiary center. Comparable spatial differences were noted in the distribution of Monte Albán II pottery in the Valley of Oaxaca (Feinman, 1982, p. 194; Kowalewski et al., 1989, pp. 180–182). In Ejutla, the site at Chichihualtepec, in spite of its small size, appears to have been especially well connected to one or more elite networks.

### Ceramic Types per Site

With fewer defined ceramic types than for earlier phases, the ceramic types-per-site indexes dropped at most sites in Monte Albán II (but not at Monte Albán itself). The decline was less in Ejutla, however, so that the average number of types per site in the Ejutla Valley was more similar to the Valley of Oaxaca than before (Table 6.6). As in Late I, the difference in the number of ceramic types at sites with mounds versus sites without mounds continued to be high in both regions, and in Monte Albán II, the difference between these two classes of settlements was considerably higher for Ejutla than for Oaxaca. In fact, the difference in the number of ceramic types at sites with mounds versus those without in Ejutla during Monte Albán II was the highest for any phase in either valley. Residents at Ejutla centers were more closely linked than

TABLE 6.6. Average number of ceramic types at Monte Albán II sites in Ejutla and Valley of Oaxaca subareas.

| | Types per site | Sites with mounds | Sites without mounds |
|---|---|---|---|
| Ejutla Valley | 9.4 | 17.6 | 5.6 |
| Oaxaca Valley | 9.4 | 14.3 | 6.3 |
| Etla | 10.6 | 15.9 | 6.1 |
| Central | 8.2 | 32.5 | 5.4 |
| Central (without Monte Albán) | 5.6 | 10.0 | 5.4 |
| Valle Grande | 11.8 | 16.2 | 8.6 |
| Ocotlán | 8.1 | 10.0 | 7.0 |
| Tlacolula | 6.8 | 11.3 | 4.9 |

before to ceramic exchange spheres that connected them with the Valley of Oaxaca, but access to these goods did not trickle down to the residents of smaller sites and settlements without mounds in Ejutla.

At the subareal level, there are different patterns in the index of ceramic types per site, depending on whether we consider all sites in each subarea or whether we compare sites with mounds to those without. Both point to Monte Albán's greater interest in the Ejutla region. First, the average number of ceramic types at sites in Ejutla was higher than for some Oaxaca subareas—only Etla and the Valle Grande had higher average numbers of types per site. The average for Central was the lowest of any subregion when Monte Albán is excluded. That Etla and the Valle Grande have higher types per site can be partially explained by their proximity to Monte Albán. As in Late I, the average number of types per site in the Central subarea area may be low because of direct administration of nearby rural sites by the ruling elite at Monte Albán. Even though Ejutla is more peripheral to the core than either Ocotlán or Tlacolula, the average number of types per site was higher there.

Second, subareal patterns in the average number of ceramic types at sites with and without mounds were more variable than in Late I. The difference between the average number of types at these two classes of settlement increased considerably in the Central subarea (Table 6.6), due almost entirely to Monte Albán. When Monte Albán is excluded, the average number of types at sites with mounds (10) and those without (5.4) in the Central subarea changed little from Late I; both averages also were among the lowest for any subregion during Monte Albán II. The patterns in the Valle Grande and Etla are similar; the average number of ceramic types at sites with mounds (16.2 and 15.9) and those without (8.6 and 6.1) was higher than for comparable sites in the Central subarea (excluding Monte Albán). The average numbers of eeramic types at mound and nonmound sites in Tlacolula were similar to comparable sites in the Central subarea. With Monte Albán excluded, however, the greatest divergence in the average number of ceramic types is between mound and nonmound sites in Ejutla (17.6 vs. 5.6). As Monte Albán's rulers expanded their political system beyond the physiographic limits of the Valley of Oaxaca, they may have placed increased energy on bringing the elites of Ejutla into the Oaxaea system, and this is reflected by greater numbers of ceramic types at the principal civic-ceremonial sites in Ejutla. The Ejutla region may have been of special interest because of its closer proximity to the coast and the access that those networks brought to coastal and mountain products that were less readily available at the center of this highland valley system.

The three major Monte Albán II centers in Ejutla (the Ejutla site, Amatengo, and Yogana) had very high numbers of ceramic types (between 26 and 30); except for Chichihualtepec (33 types), no other site had more than 14 ceramie types. Because of their positions at the top of both the population and mound hierarchies, the three large centers clearly had access to a greater variety of pottery than residents of most other sites in Ejutla. Yogana's position at an entry point into the Ejutla Valley also may have been a factor in higher ceramic diversity at that settlement. Although Chichihualtepec was never large (population less than 100), it was a low-level mound center and has more continuity from earlier phases than any other site in Ejutla. Its inhabitants may have managed to maintain earlier ties to elite networks even as Monte Albán took a greater interest in the emerging eenters in southern Ejutla.

For Ejutla as whole, the distribution of more costly/ elaborate pottery was elearly linked to status and position in the regional site hierarchy. This variation in pottery distributions reflects greater integration at the level of elites, possibly through growth of exchange and alliance networks at the regional level (Kowalewski et al., 1989, p. 180).

## Regional Organization and Integration

For the powerful, the ceramic data from both Ejutla and Oaxaca indicate greater connectivity. In this regard, Ejutla elites appear more integrated with Oaxaca than during previous phases when Ejutla appears to have largely been an unintegrated frontier of the Valley of Oaxaca. Just as changes in pottery distributions across the Valley of Oaxaca reflect shifts in the regional organization of the Valley of Oaxaca from Late I to Monte Albán II, so do changes in the settlement pattern data, including the presence of more breaks in the distribution of settlements, especially between Monte Albán and the valley arms, and the presence of four settlement clusters (instead of three; Fig. 6.17) that are more similar to the pre–Monte Albán Rosario phase clusters in terms of spatial extent (but not population distribution). The core cluster, centered on Monte Albán, decreased in size as the Etla region, centered on San José Mogote, formed a distinct cluster to the north. Still, San José Mogote appears to have been made over in Monte Albán II with an architectural plan more like the capital (Flannery & Marcus, 1983b; Blanton et al., 1993, p. 86), indicating a closer connection between Etla and Monte Albán than the breaks in settlement might suggest. In contrast, the core cluster expanded to the south to include all the dispersed settlement in the Valle Grande. Large sites like Tilcajete appear to have been more fully incorporated into the Monte Albán polity than they had been previously (Redmond & Spencer, 2008; Spencer, 2009). The boundary between the core cluster and Tlacolula basically remained the same as in Late I, even as several new, large centers emerged. The exception was the southern Ocotlán area, which, along with northern Ejutla, remained one of the most sparsely settled areas of the valley in Monte Albán II.

With decreasing populations and greater nucleation in Ejutla and the Valley of Oaxaca, there was increasing concentration of civic-ceremonial functions in a smaller set of sites (Table 6.4; Kowalewski et al., 1989, table 7.4). Almost half of the largest sites (7 of 15) are situated in Etla alone,

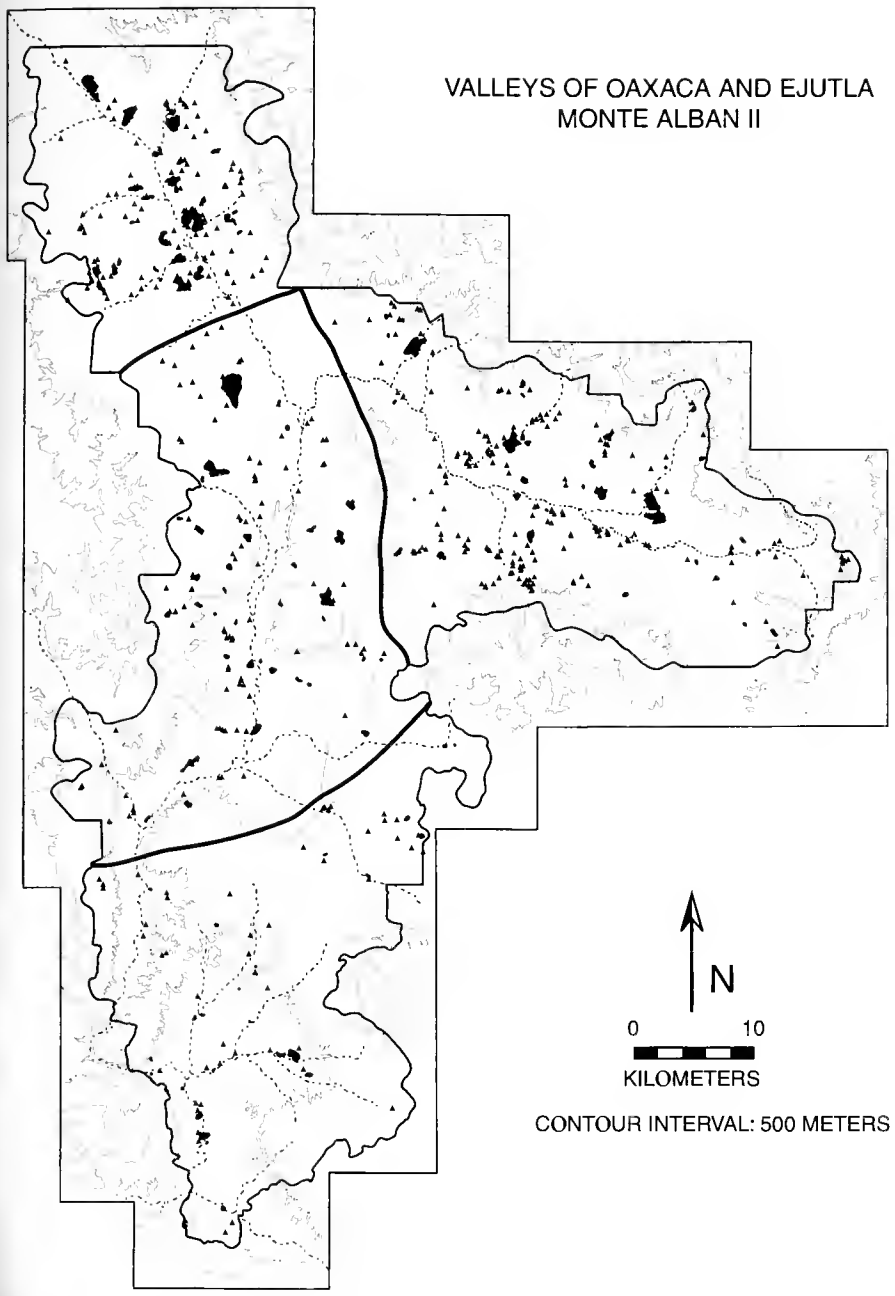



FIG. 6.17. Monte Albán II settlement clusters in Ejutla and the Valley of Oaxaca.

with most of the rest (excluding Monte Albán) spread out across northern Valle Grande and western Tlacolula (Fig. 6.2). For the first time, one of the largest sites (the Ejutla site, now a Level III population center) in the combined Oaxaca–Ejutla region was situated in Ejutla. But the relative spatial isolation (or distance) of the Ejutla site (II-16) from other large centers indicates that the Ejutla region had much more of a periphery/core relationship with Monte Albán than did other centers of comparable or greater size. The link was more dendritic in nature rather than well integrated (e.g., Smith, 1974, pp. 177–179). Settlement in the Ejutla region formed a separate cluster, with its largest center (the Ejutla site) approximately 20 km from Tlapacoyan and 25 km from Santa Inés Yatzeche.

The settlement pattern data have been interpreted to indicate less integration overall in Oaxaca in Monte Albán II (Kowalewski et al., 1989, p. 162), a pattern supported by ceramic analyses. In many respects, settlement in the Ejutla Valley was similar to the dispersed settlement in southern Valle Grande, one of the least integrated parts of the Valley of Oaxaca. In Ejutla, sites with mounds spatially divide into three small separate clusters of two or three centers, one along the Atoyac River in southern Ejutla, one in central Ejutla near the Ejutla River, and one in northern Ejutla. The distance between each cluster is approximately 8 km. The northern cluster also is approximately 7 km from the nearest mound center in the Valle Grande (Fig. 6.12), and the southern cluster is about 8 km from the closest Monte Albán II site with architecture in Miahuatlán. Except for Yogana, which is 6 km from the nearest center, the distances between centers within the three clusters are 4 km for the two southern clusters and 3 km for the two small centers in the northern cluster.

Chichihualtepec, in northern Ejutla, continued to be an exception. It is the only site in the northern Late I Ejutla cluster that retained its population in Monte Albán II. At that time it was paired with a defensibly located site on a ridge at the edge of the steep escarpment a few kilometers to the north. We do not know how closely this site was tied into the rest of the Ejutla regional system. It always stood out in terms of access to a range of goods, even though it was never one of the largest sites in Ejutla. It seems likely that the residents of the site belonged to a family that earlier had gained status/power by allying themselves to the elites at Tlapacoyan. While Tlapacoyan remained a small low-level civic-ceremonial center in Monte Albán II, there still was no comparable center in southern Ocotlán, so the residents of Chichihualtepec may have continued to prosper through their connection to Tlapacoyan even as power was shifting to the Ejutla site. Or did Chichihualtepec serve as some sort of outpost or secondary center for communication between Oaxaca and Ejutla, even though it is different from most boundary sites in the Valley of Oaxaca (Kowalewski et al., 1989, p. 195) in having high ceramic variety?

In sum, the hierarchical relationship between sites in Ejutla and Oaxaca became more established in Monte Albán II, with most of the interaction between the two valleys occurring along elite networks that were centered at the region's largest sites. Given the large area of low dispersed settlement in northern Ejutla and the Ocotlán subarea of southern Valle Grande, it is possible that the Ejutla region retained at least a low degree of autonomy at the beginning of this long phase. Yet the concentration of over half of the Ejutla population in the three largest sites, with large architectural complexes, is consistent with what we might expect in a peripheral area that was more fully incorporated into the Monte Albán orbit. These same sites also have much higher ceramic variety than surrounding smaller sites, and many of the different ceramics appear to have been acquired through distinct networks. Some of the ceramic variety may have come directly from Monte Albán's elite, yet the high-status residents of the Ejutla region may have retained sufficient autonomy to maintain certain networks independent of Monte Albán.

Farther south in Miahuatlán, settlement patterns do not appear to have changed as much between Late I and Monte Albán II; sites still were heavily concentrated in alluvial areas and near the modern town of Miahuatlán (Markman, 1981). Markman also did not record a population decline similar to what occurred in Ejutla and Oaxaca. Yet there are some similarities with Ejutla, especially between the Ejutla site (II-16) and the largest site in Miahuatlán, situated under the modern head town of the district. Both have fancy Monte Albán II Oaxaca ceramics, evidence of marine shell procurement and working, and an increase in the number of public structures. The pattern of Monte Albán's rulers trying to build alliances and economic channels to the elite in more peripheral areas may extend beyond Ejutla into Miahuatlán.

## Human/Land Relationships

The Monte Albán II archaeological population of the Valley of Oaxaca reached only 14% of its resource-based potential, and the figure was merely 4% in Ejutla (Table 6.7). Except for the Central subregion, where the population was more than 60% of the potential, there was slightly less variation between subregions than there had been in prior phases, around 10% in Etla, Tlacolula, and northern Valle Grande and less than 5% in southern Valle Grande and Ejutla.

Even though the population of the Ejutla Valley was far below the region's carrying capacity, that finding masks a significant change in the distribution of the population relative to agricultural resources; only in Monte Albán II was the correlation between population and land quality negative in Ejutla ($r = -.021$). That relationship was always negative in Oaxaca when Monte Albán is included, but excluding the capital, the fit in Monte Albán II between population and land quality was better in Oaxaca ($r = .215$). In Ejutla, the negative correlation is a consequence of the location of the area's largest sites. Two of those sites (Amatengo and Yogana) are located near narrow river channels bordered by relatively unproductive piedmont terrain. Growth at those sites appears to have resulted from communication/traffic considerations instead of agricultural concerns. Meanwhile, much more productive patches of land in north-central Ejutla were very sparsely populated.

The overall population of Oaxaca was 65% of the potential level that could have been sustained by the available labor supply (slightly lower than in Late I). Because of the increased concentration of people in the southern, less productive part of the Ejutla region, the relationship there declined from what it had been in Late I, with the population at 50% of the level that could have been sustained by available labor. Except for Central, where population exceeded the potential level, all other subregions of the Valley of Oaxaca were similar to Ejutla. Population relative to labor-based potential was lowest in southern Valle Grande, at only 30%.

Overall patterns of potential surplus production across the valley changed little from Late I (Fig. 6.18), in spite of the marked change in settlement patterns. Etla continued to be the greatest potential surplus producer, followed by northern Valle Grande. Surplus potential in the Central subregion (before considering Monte Albán's needs) was similar to southern Valle Grande and western Tlacolula. Ejutla and eastern Tlacolula had the lowest surplus potentials. Surplus potential was greater in and near the core of the Monte Albán polity, with much lower levels of potential surplus in the valley margins. This pattern mirrors the distribution of population and not just the distribution of good land resources.

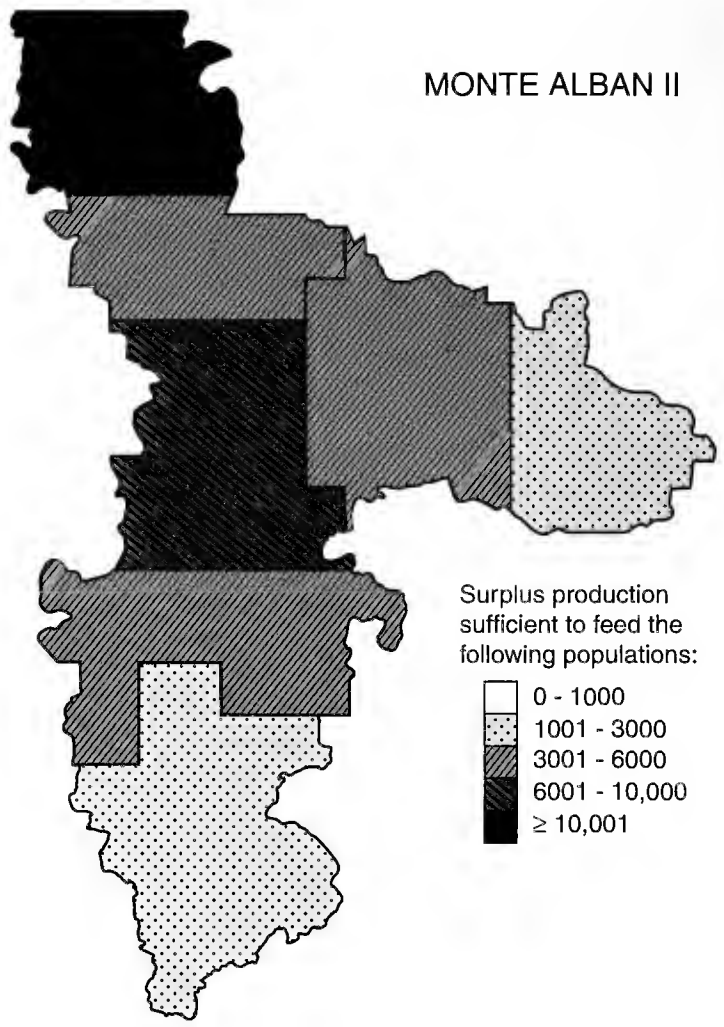



FIG. 6.18. Monte Albán II surplus in Ejutla and Valley of Oaxaca subregions (based on rural producers, Central area does not include Monte Albán's population).

Surplus and deficit production in the Ejutla region was more variable than it had been in Late I; still total production across the region could have been twice what was needed to sustain the population. Only in two grid squares in Ejutla, each with very low population, were surpluses unlikely. In dry years, though, the regional population may have faced more difficulties. With a greater concentration of population in fewer, less productive areas, as much as a third of the population may have experienced food stress when rainfall was low. Lower consumption and food imports may have been necessary to sustain the Ejutla population in those years.

Of the five grid squares where dry-year production may have been deficient, two had very low populations. The other three are in the same areas where potential problems would have arisen in Late I. Grid square S2E5, in the low hills of western Ejutla, could have received more than enough surplus from the adjacent square. Amatengo and Yogana, along the Atoyac and Miahuatlán Rivers of southern Ejutla, also would have experienced potential food stress. Both of these sites had

TABLE 6.7. Estimated archaeological, resource-based, and average labor-based potential populations for Ejutla and Valley of Oaxaca subregions in Monte Albán II.

| | Ejutla | Etla | Central | Northern Valle Grande | Southern Valle Grande | Western Tlacolula | Eastern Tlacolula |
|---|---|---|---|---|---|---|---|
| Estimated archaeological population | 2,184 | 8,266 | 18,694 | 5,015 | 2,073 | 5,404 | 2,475 |
| Resource-based potential population* | 55,600 | 66,400 | 30,700 | 66,100 | 57,200 | 52,200 | 23,400 |
| Average labor-based potential population** | 4,000 | 20,400 | 9,600 | 11,800 | 6,400 | 10,500 | 4,600 |

* Based on full exploitation of all agricultural land resources in each subregion.

** Based on available labor supply and equal use of Class I and II land near recorded settlements.

high quantities of Monte Albán II Oaxaca cremas, indicating increasing interaction/integration with other regional elites; these networks also could have served to channel food resources when necessary. The populations of the Amatengo and Yogana areas also could have supplemented maize yields by relying on xerophytic plants, which could have been grown in the piedmont and would have better withstood years that were low in precipitation. At the time of the survey, mezcal *palenques*, processing maguey, were present in the Amatengo community.

## Summary

During the transition from Late I to Monte Albán II, the nature of the political and economic connections between Ejutla and the Valley of Oaxaca shifted with the strengthening of political and certain economic links. There was marked discontinuity in settlement location, as many small, earlier centers either decreased in size or were abandoned. Three strategically positioned Late I centers in the Ejutla region did expand, and that demographic growth was accompanied by architectural elaboration. The two smaller and southernmost, Amatengo on the Atoyac River and Yogana on the Miahuatlán River, reached their maximum extent in Monte Albán II. The third center, the Ejutla site, was situated in the middle of the Ejutla River drainage and grew to twice the size of any prior or contemporaneous settlement in Ejutla. At the same time, the number of small hamlets in northern Ejutla and the southern Valle Grande decreased, which suggests a probable drop-off in the kinds of horizontal communications that likely occurred earlier along this more open frontier. Instead, as in Cuicatlán, for the first time several sites in the Ejutla Valley were positioned in defendable hilltop locations, closer to the larger sites in the south and overlooking the most direct route between Monte Albán and the Ejutla site. Given the emergence of three centers in the Ejutla region and their proximity to communication routes, connectivity between Ejutla and Oaxaca increased, likely channeled through the residents at major centers. At the same time, the presence of closed plaza groups at these centers and giant platforms at the Ejutla site point toward tighter political bonds between Monte Albán and the major centers in the Ejutla region. These changes indicate a shift in the nature of the relationship between Ejutla and Oaxaca; Ejutla was no longer a poorly integrated frontier area but a more fully incorporated periphery of the Monte Albán state, with interaction occurring through networks of the powerful at fewer but larger centers (Feinman & Nicholas, 1990a, 1991b).

A shift in the nature of interactions between the Valley of Oaxaca and Ejutla also is suggested by the changing distribution of crema pottery. Whereas Monte Albán I cremas were more randomly distributed in Ejutla, the highly decorated Monte Albán II varieties were more abundant at the largest sites, which indicates a more direct connection between elites at Monte Albán and the region's core and these Ejutla centers. The greater connectivity may have reduced the necessity for the Ejutla centers to be well positioned relative to agricultural resources, and for the first (and only) time in the pre-Hispanic occupation of the region, there was a negative relationship between settlement location and agricultural productivity. The residents of Ejutla may have become somewhat dependent on their ties with the larger valley to the north, while synergistically the goods and products that traveled to the Valley of Oaxaca and Monte Albán through the Ejutla corridor, including shell and mica (the latter available in the Ejutla region), likely gained greater importance there.

The exaction of surplus grain from the Ejutla Valley likely was not a principal interest of Monte Albán's rulers. As Spencer (1982) suggested for Cuicatlán, the inhabitants of Ejutla, which is situated at a lower elevation than the Valley of Oaxaca, may have grown cotton or other more tropical products desired by elites at Monte Albán. Ejutla also may have been considered important because it was a conduit for exchange links with mountain, coastal, and lowland areas (to which it still provides a gateway today; Beals, 1975, pp. 44, 128). When traveling from Monte Albán to the Pacific Coast of Oaxaca, the quickest and widest array of paths to travel by foot pass through the Ejutla region (White & Barber, 2012).

Although many of the likely coastal imports (e.g., feathers, cloth, cacao, animal pelts, tropical fruits, and resins) would leave few if any archaeological traces, particularly on the surface, one coastal item, shell, was notably abundant in surface collections from Ejutla. Shell was recorded at only 20 archaeological localities (out of 2,700) in the Valley of Oaxaca (Kowalewski et al., 1989) compared to 21 sites (out of 423) in Ejutla. Per capita, surface shell was six to seven times more abundant in Ejutla than in the Valley of Oaxaca. We recorded the greatest surface concentration of marine shell in the Ejutla region at the edge of the modern town of Ejutla de Crespo (the Ejutla site). This locality, which dominated the Ejutla region during Monte Albán II, is one of only three settlements in the combined Oaxaca–Ejutla survey region that was identified, based on surface shell concentrations, as a possible shell-working area. The other two are major Valley of Oaxaca centers: Monte Albán and San José Mogote. Subsequent excavations in one small sector of the Ejutla site (Feinman & Nicholas, 1995, 2000, 2004b) have documented the household production of shell ornaments during the Classic period but have not ruled out shell production during the Terminal Formative as well.

Whatever Ejutla's specific relationship was to Monte Albán during Monte Albán II, it seems clear that the Ejutla region was incorporated under the political hegemony and within the political boundaries of the Monte Albán polity by the following phase (Monte Albán IIIA). At that time in the Early Classic period, Monte Albán solidified its domination of its more immediate hinterland and diminished its claim to more distant areas, such as the Cañada de Cuicatlán (Spencer & Redmond, 1997).

# Chapter 7: Monte Albán Expansion: Monte Albán IIIA

> Institutions ... are the consequence of human actions. It is individuals who act, individuals who think. Individuals create institutions—although, of course, institutions, structures, and macro-states also influence individual preferences and behaviors.
>
> Explanations would be incomplete without an account of the ways in which macro-level variables affect the micro-level ones, and vice versa.
>
> (Levi, 1988, pp. 7–8)

Across highland Mesoamerica, the Early Classic period (ca. AD 200–500) was a time of high population growth, increasing community size, and greater economic integration, particularly between emergent centers and rural populations in those same regions (Smith, 2002; Kowalewski, 2004, pp. 92–93). This episode of widespread demographic growth was often accompanied by settlement pattern shifts as polities competed with one another and highland Mesoamerica's people became ever more concentrated in large centers. Nowhere was this more evident than in the Basin of Mexico, where population growth continued unabated at Teotihuacan, which grew to well over 100,000 people (Hirth, 1980, pp. 57–58; Blanton et al., 1993, p. 134; Cowgill, 1997, p. 130, 2008, p. 969). The settlement system was heavily primate with only small villages and hamlets elsewhere in the basin, especially in the south; possible provincial centers in rural areas were less than one-twentieth the size of Teotihuacan and had orders of magnitude less civic-ceremonial architecture (Cowgill, 1979, pp. 52–53; Blanton et al., 1993, p. 129). Economic and political power in the Basin of Mexico was clearly concentrated in this one enormous center (Cowgill, 1979, p. 55, 2000, p. 279; Hirth, 1980, p. 58; Blanton et al., 1993, p. 129).

This powerful new center expanded militarily and formed new economic arrangements on a macroregional scale never seen before in Mesoamerica (Blanton et al., 1993, p. 87), extending its economic networks to areas beyond the Basin of Mexico (Hirth, 1980, p. 94; Cowgill, 1997, p. 134; 2000, p. 285). Teotihuacan likely held degrees of economic and political influence and control over nearby valleys in the Central Highlands, in Morelos, Toluca, southern and central Hidalgo, central and southern Puebla, and Tlaxcala (Hirth, 1980, pp. 98–99; Cowgill, 2000, p. 285; Carballo & Pluckhahn, 2007, pp. 621–622; Fig. 7.1). Teotihuacan's interests were focused along natural trade and communication corridors (Hirth, 1980, p. 98). In the Amatzinac River valley of eastern Morelos, just south of the Amecameca Pass into the southern Basin of Mexico, significant settlement pattern changes reflect major shifts in the economy as the area was linked into Teotihuacan's political sphere (Hirth, 1978, p. 325, 1980, p. 99; Arana, 1987, p. 387). During the Early Classic, the principal center in the Amatzinac River valley shifted from the north to the southern part of the valley (at San Ignacio), an area that previously was relatively unimportant but where irrigation potential was greater (Hirth, 1978, p. 328, 1980, pp. 63, 94; Hirth & Angulo, 1981, p. 145).

Other areas were too distant to be directly controlled by Teotihuacan but nonetheless were influenced by trade with the urban center and its attempts to monitor production and key trade routes (Hirth, 1980, p. 99; Cowgill, 1997, p. 134). Oaxaca, in the Southern Highlands, was one area that maintained diplomatic and exchange relations with Teotihua-

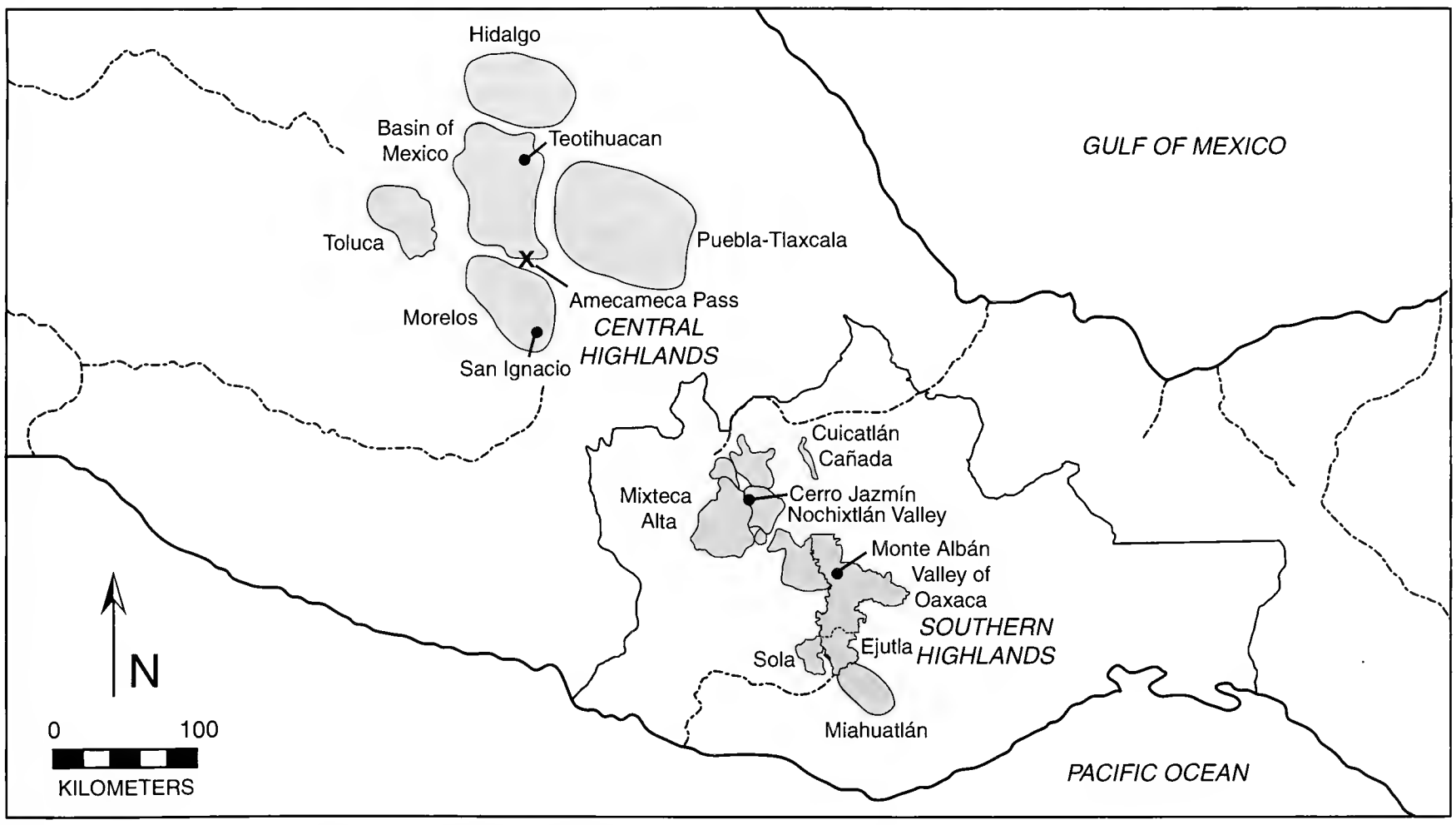



FIG. 7.1. Regions and sites in Oaxaca and central Mexico mentioned in the text.

can but remained for the most part autonomous politically (Blanton, 1978, p. 57; Hirth, 1980, p. 100; Marcus & Flannery, 1996, pp. 231–233; Cowgill, 1997, p. 135, 2000, p. 286; cf. Winter, 1998, 2001). Yet Teotihuacan's macroregional dominance did affect the nature of the Valley of Oaxaca's relationship with the rest of highland Mesoamerica. Although Monte Albán's population grew to more than 16,000 (Blanton, 1978, p. 58), the Monte Albán state lost territory and influence beyond the Central Valleys of Oaxaca as the powerful central Mexican state expanded (Blanton et al., 1993, pp. 87–88). There are no indications of a continued Monte Albán presence in Cuicatlán in Monte Albán IIIA (the Early Classic in Oaxaca; Table 1.1; Redmond, 1983; Spencer & Redmond, 1997, p. 216). In other regions outside the Valley of Oaxaca that previously had Monte Albán II style pottery, the ceramic assemblages shifted in a manner to reflect evident Teotihuacan influence (Blanton et al., 1993, p. 88). Although Monte Albán remained largely politically autonomous of the much larger metropolis to the north (Marcus, 2009, pp. 97–98), the latter's strategic influence may have constrained extraregional actions by the Valley of Oaxaca center (Cowgill, 2008, pp. 969–971). As a consequence, during IIIA the ruling authorities at Monte Albán refocused their own political and economic attentions closer at hand, within the Central Valleys of Oaxaca, more fully integrating the valley population and adjacent smaller southern valleys, such as Ejutla. As in Monte Albán I, revenues for the Monte Albán polity in IIIA appear to have been procured locally from agrarian surplus, as the relative importance of exotic imports (more significant in Monte Albán II) was somewhat diminished.

In contrast to the Basin of Mexico, where the settlement system was so heavily primate that the settlement hierarchy was shallow (Smith, 2002, p. 293), population growth in most of the rest of highland Mesoamerica occurred in centers and settlements at many levels, resulting in lower primacy than during the Terminal Formative. In highland Oaxaca there were several new large centers, both in the Valley of Oaxaca (Fig. 7.2) and in the Mixteca Alta (Fig. 7.1), that rivaled Monte Albán in population size—Jalieza in the Valle Grande, Dainzú/Macuilxochitl/Tlacochahuaya in Tlacolula, and Cerro Jasmín (Yanhuitlán) in the western Nochixtlán Valley (Kowalewski et al., 1989, pp. 226–229; Blanton et al., 1993, p. 88; Kowalewski et al., 2009, p. 35). Strictly in terms of the size of the largest settlements, the Valley of Oaxaca was less centralized than before, and Monte Albán may have achieved greater integration of the Valley of Oaxaca by ceding some power/functions to governing elites at other new, large centers that enjoyed some degree of autonomy (Blanton et al., 1982, p. 94). Yet Monte Albán continued to be unmatched in terms of architectural monumentality (Blanton et al., 1993, p. 87; Marcus, 2009, pp. 96–98). Monte Albán monopolized the incorporation of writing in civic-ceremonial contexts (Marcus, 1989, 1992, 2006) and clearly continued to be the preeminent center in the entire Southern Highlands.

Other, smaller centers in the Valley of Oaxaca grew proportionally more than Monte Albán, so the depth of the settlement hierarchy increased (Kowalewski et al., 1989, p. 229). Patterns in the Mixteca Alta were more variable. Most valleys in the Mixteca experienced population growth during the Early Classic as previously abandoned areas were recolonized and the population expanded into new areas (Kowalewski et al., 2009, p. 305), yet except for Cerro Jazmín in western Nochixtlán, the largest centers in the other valleys of the Mixteca were more the size of Rank II and III centers in the Valley of Oaxaca. Whereas by the Early Classic period most of the Valley of Oaxaca was at least to a degree politically and economically integrated into one large polity centered at Monte Albán, the Mixteca Alta may have comprised at least four separate, smaller polities with shallower hierarchies and less integration (Smith, 2002, p. 293).

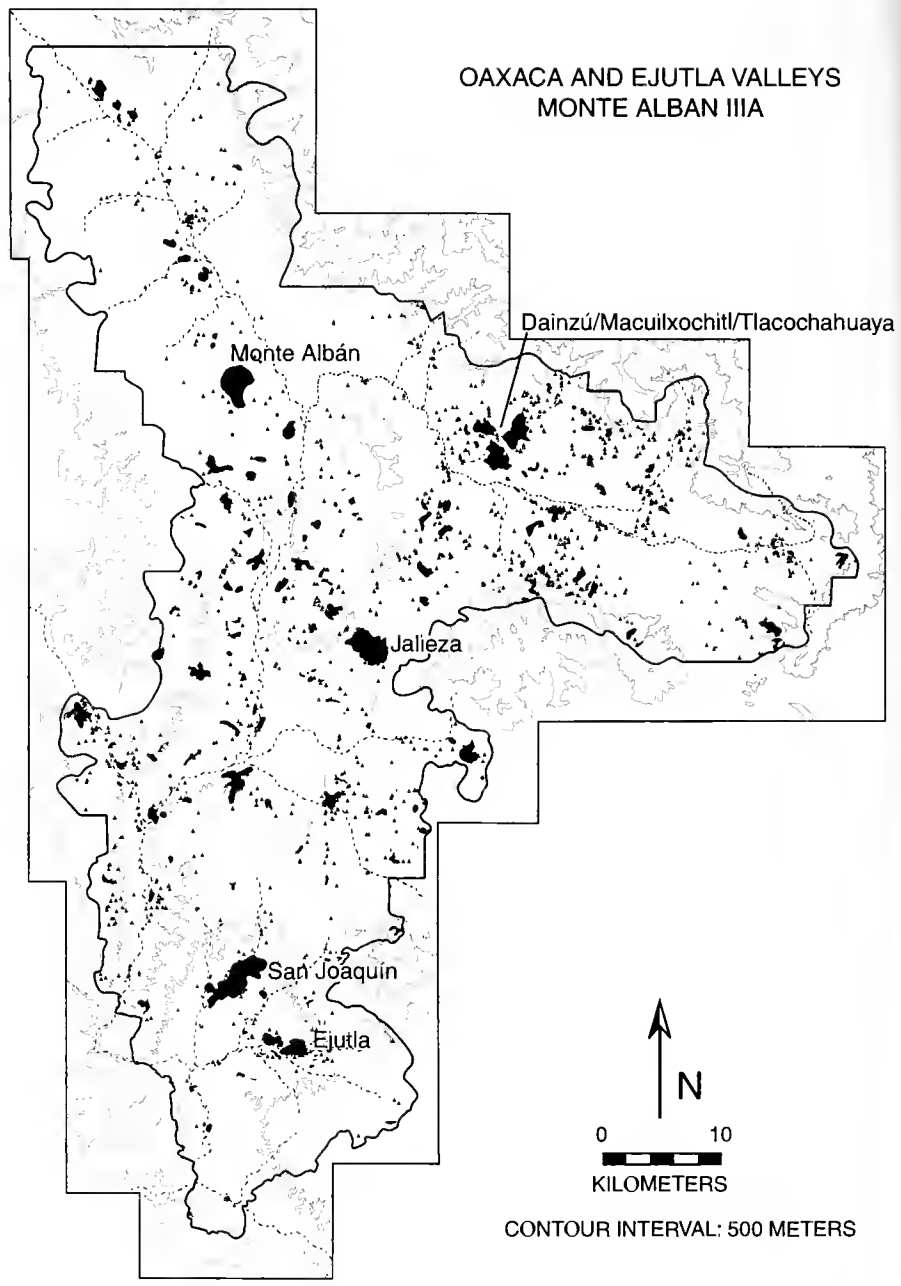



FIG. 7.2. Monte Albán IIIA settlements in Ejutla and the Valley of Oaxaca.

During Monte Albán IIIA, the Ejutla Valley fell within the political boundaries of the Monte Albán state. Our findings from Ejutla (detailed below) align with previous arguments that suggested that the Zapotec capital (in IIIA) solidified its domination of its more immediate hinterland at the same time that it was diminishing its claim to distant arenas (like Cuicatlán) (Blanton et al., 1982, pp. 85–101; Redmond, 1983, pp. 149–168). Although framed in different terms, archaeological observations of a more interconnected valley with less permeable boundaries separating it from external regions during the Classic period stem back to Bernal's (1965) first regional-scale research in the region. Based on a shared ceramic complex and shifts in settlement patterns, the area under Monte Albán's "domination" or strong influence likely also included the Sola Valley, west of Ejutla (Balkansky, 2002). The picture is less clear for the Miahuatlán Valley, south of Ejutla, where the survey was not full coverage, especially in upland areas. From the information available, though, Miahuatlán does not appear to have experienced the same suite of settlement pattern changes (Markman, 1981, p. 67) that were observed for Ejutla and Sola. The relative changes between what Markman recorded for Monte Albán II and IIIA may indicate that Miahuatlán's northern boundary

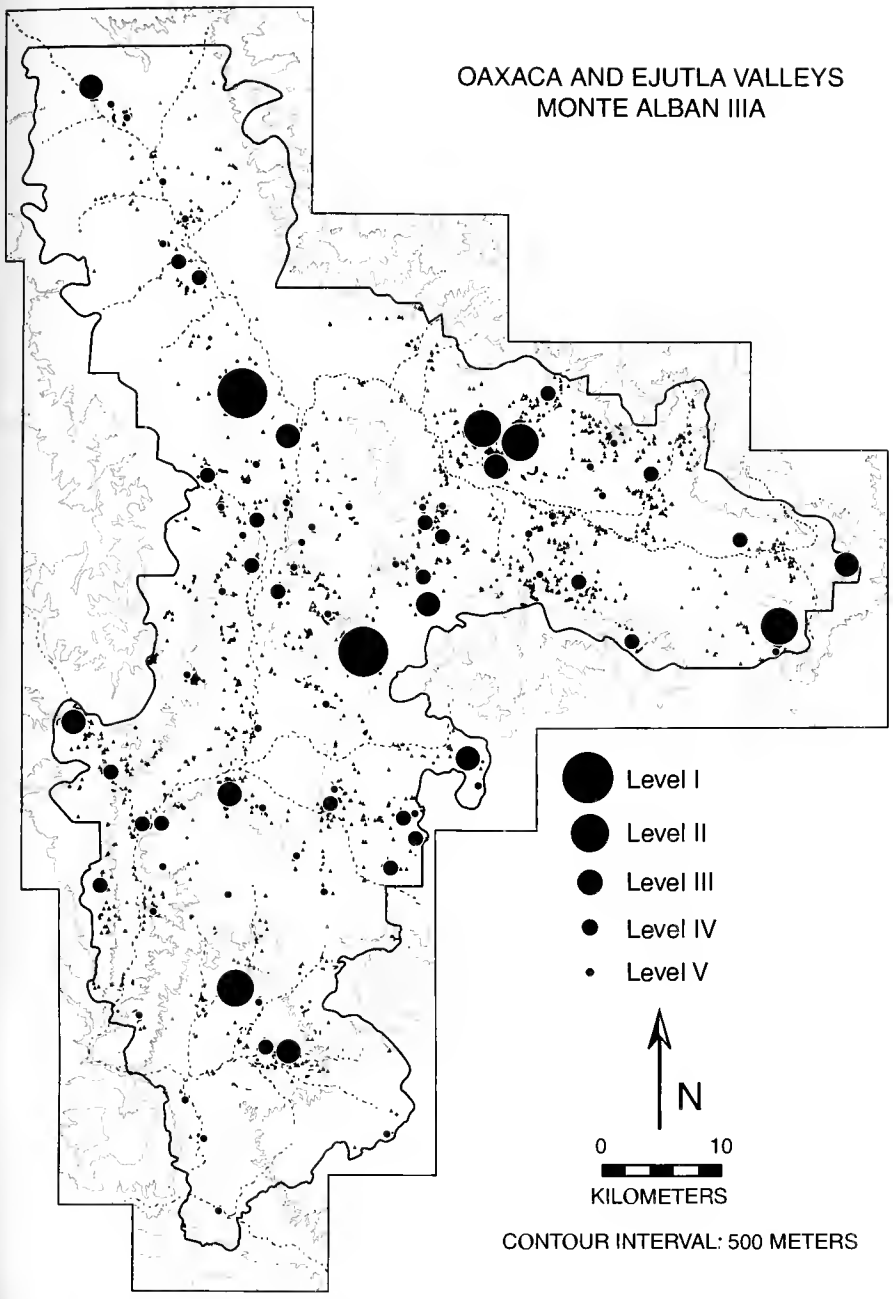



FIG. 7.3. Monte Albán IIIA population centers in Ejutla and the Valley of Oaxaca.

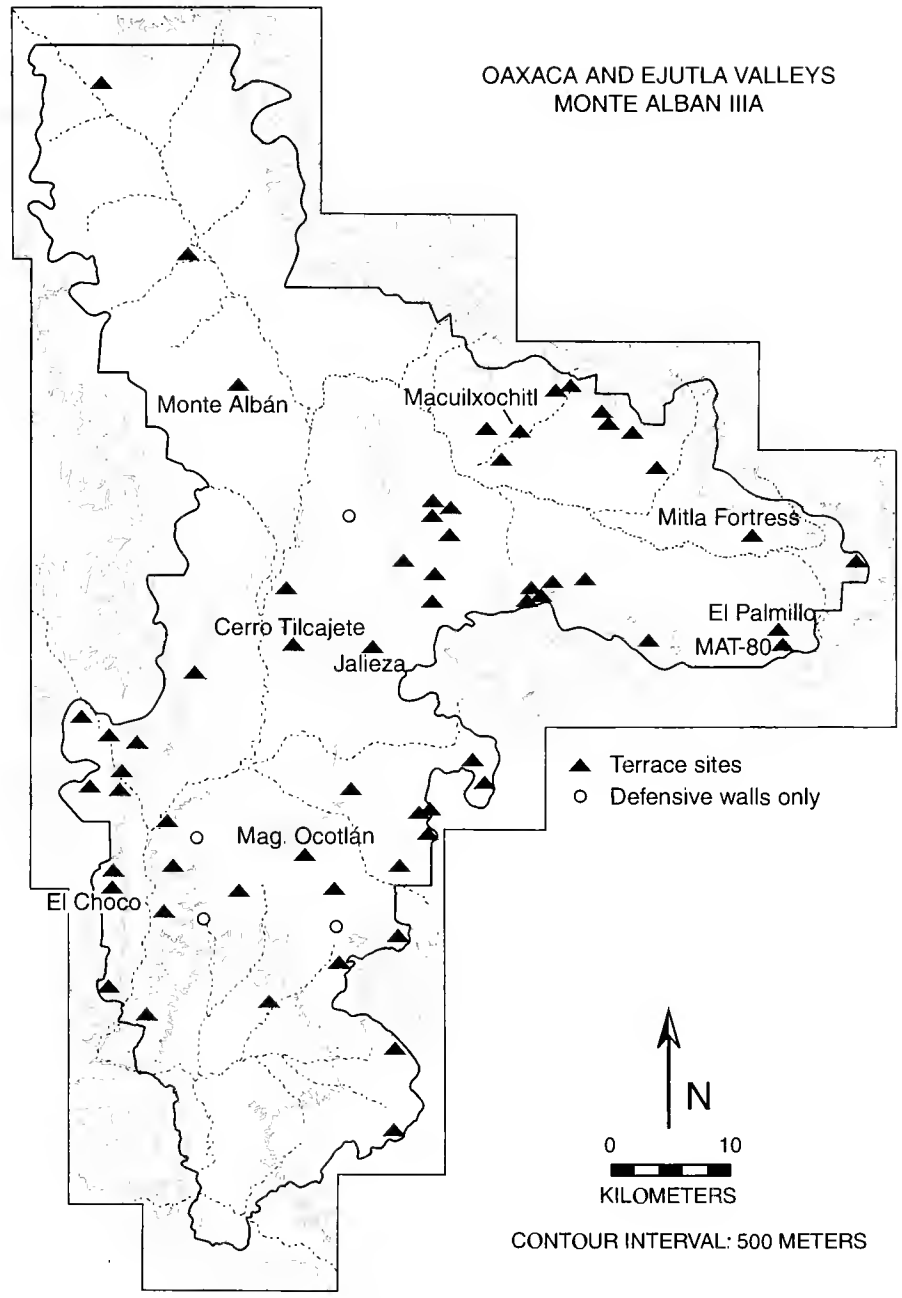



FIG. 7.4. Monte Albán IIIA terraced sites in Ejutla and the Valley of Oaxaca.

with Ejutla marks the southernmost limits of Monte Albán's strongest influence in IIIA.

In Monte Albán IIIA, earlier subregional clustering of settlements in the Valley of Oaxaca largely disappeared, with the population distributed more evenly and continuously across the region. The distribution of the region's largest sites indicates greater integration than ever before between all three valley arms (Fig 7.3). The largest sites (those with populations over 1,000) were relatively evenly dispersed throughout the Valle Grande, Ocotlán, and Tlacolula, with several now located in Ejutla. The four largest sites were fairly evenly spaced—Monte Albán in the center of the valley, Jalieza in the Valle Grande, Dainzú/Macuilxochitl/Tlacochahuaya in Tlacolula, and a new center at San Joaquín in Ejutla (Fig. 7.2). Distances between the three Valley of Oaxaca centers ranged from 17.5 to 20.5 km, with San Joaquín only slightly more distant (24.8 km) from Jalieza. The continuity of settlement with no significant gaps from the Valley of Oaxaca core south into the Ejutla Valley indicates that the entire region was by this time more interconnected than ever before.

Perhaps one of the most significant features of the Monte Albán IIIA landscape in Oaxaca is the positioning of a ring of hilltop terrace sites along the southern and southeastern fringes of the valley without a gap from Tlacolula to Ejutla (Fig. 7.4). The ring of terrace sites extends as far as the Sola Valley (Balkansky, 2002). Terrace sites had long been present in the Valley of Oaxaca, beginning with Monte Albán's foundation during the Middle Formative (ca. 500 BC; Blanton, 1978), but it was not until the Early Classic that they became such significant features, housing a significant percentage of the region's population. Most of the terrace sites are defensibly located on hilltops at the valley's edge, likely because of heightened military tension throughout the highlands as a result of Teotihuacan's expansionist pursuits (Blanton, 1978, p. 57). Yet it is not always clear against whom the inhabitants were defending themselves—it may at times have been their neighbors. Monte Albán had previously engaged in military conquests, and the incorporation of the entire Valley of Oaxaca into the Monte Albán polity likely was not completely without internal conflicts. With a less demographically centralized system, these communities also may have been in occasional competition with each other, thereby fostering the construction of more defensive features for protection against raids by their neighbors. Such conflicts between neighboring communities continued into the 20th century in Oaxaca (Dennis, 1987). At the same time, the relative absence of settlement gaps indicates that exchanges and interactions between communities were not often curtailed.

Many of the Oaxaca terrace sites had large, dense populations and were not situated near large patches of good

agricultural land (Kowalewski et al., 1989, pp. 240–245). Many are located in drier parts of the valley, and their inhabitants would have had trouble growing enough crops to feed themselves on nearby land even during normal rainfall years, much less in dry years. During the surveys, we recovered more evidence of specialized nonagricultural production at these sites, especially the larger ones, than at most valley-floor sites. The spatial imbalance between relative agricultural productivity and population indicates greater economic connectivity between communities, made possible by the greater integration of the Valley of Oaxaca at that time. Households at terrace sites could have produced a range of nonagricultural goods that they likely exchanged for food grown elsewhere in the region. The buildup of population in the drier, eastern arm of the Valley of Oaxaca that began during the Early Classic may not have been possible without greater integration with the more agriculturally productive parts of the valley, from which maize could have been procured during dry years.

During Monte Albán IIIA, we recorded more surface indicators for the production of specialized nonagricultural goods (Kowalewski et al., 1989, pp. 213–226; Blanton et al., 1993, p. 9). That is not to say that specialized production did not occur or that it was not important earlier; it was, with ceramic production for exchange occurring as early as Monte Albán I (Feinman, 1982; Feinman et al., 1984a). But the scale of specialized nonagricultural production clearly was much greater in Monte Albán IIIA. Compared to earlier, we recorded a much greater number of places where we encountered evidence for specialized production, and at some of those sites the quantities of such production debris were more abundant than found at older settlements.

Although terrace sites and specialized production were present in the Valley of Oaxaca during prior periods, those contexts tend to be multicomponent. In contrast, most single-component eontexts pertain to Monte Albán IIIA or later. For this reason, we have purposely put off in-depth consideration of terrace sites and specialized production until this chapter. We also have waited to introduce discussions of a range of other materials recovered on the surface, such as obsidian, spindle whorls, and marine shell, as it is not until IIIA that we have adequate samples, many from single-component sites, to make meaningful spatial and temporal comparisons. Such considerations are more speculative and tentative when temporal context is largely uncertain. With the temporal contexts more secure for these classes of evidence in Monte Albán IIIA, we introduce and discuss them after presenting the IIIA settlement patterns.

## Monte Albán IIIA Settlement in Ejutla

The transition from Monte Albán II to IIIA in the Valley of Oaxaca was marked by a significant shift in settlement patterns, including the growth and proliferation of terrace sites. The pace of new settlements and monumental building was especially rapid in the Valle Grande. Demographic growth in the southern part of Oaxaca also extended into the Ejutla Valley. Balkansky (2002) recorded a similar increase in population in the Sola Valley between Monte Albán II and IIIA.

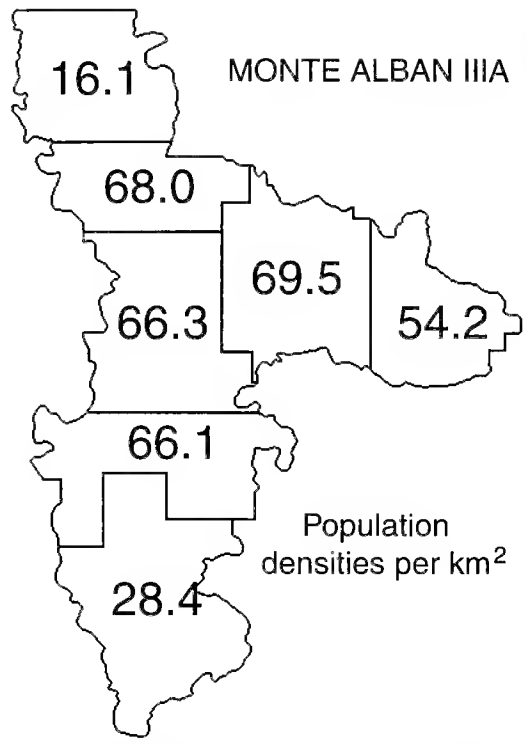



FIG. 7.5. Monte Albán IIIA population densities in Ejutla and Valley of Oaxaca subregions.

The full incorporation of the Ejutla region into Monte Albán's political sphere by Monte Albán IIIA is indicated by several lines of evidence that reflect a new focus on areas within the Central Valleys of Oaxaca. To begin, population increased at a higher rate in the Ejutla Valley than in the Valley of Oaxaca as a whole between Monte Albán II and IIIA, at a rate comparable to that in the two most peripheral valley subregions (southern Valle Grande and eastern Tlacolula; Feinman et al., 1985, p. 346; Feinman & Nicholas, 1990a, table 4). With higher growth rates in these more geographically peripheral areas, population densities in the individual subregions of Oaxaca and Ejutla were more similar to each other than during any other period (Fig. 7.5). Still, population and site densities in the Ejutla Valley continued to be lower than in the Valley of Oaxaca (Table 7.1). Average site population and average site size (in hectares) for the two regions were more comparable. When the distorting affect of the largest centers is removed, average site sizes (in hectares) for the valley's subregions were similar (Table 7.2).

The densest distribution of settlements in Ejutla was in the center of the region around the Ejutla River and its northern tributaries (Fig. 7.6). Over half the population was situated in the north-central subarea, principally in the new center at San Joaquín (IIIA-24, in grid square S1E6); another 25% of the population resided along the Ejutla River in the central part of the valley. The new large center at San Joaquín was situated 5 km closer to Monte Albán and Jalieza than the Ejutla site was, in an area that earlier had been sparsely settled (Fig. 7.2). The Ejutla site (IIIA-74, in grid square S2E7), which had been the largest Monte Albán II center, continued as the second-largest community in the region (it grew slightly); however, it was only one-quarter the size of San Joaquín, which by itself comprised 45% of the Ejutla Valley population. In fact, San Joaquín was the fourth-largest population center in the combined Oaxaca/Ejutla region in IIIA. The repositioning of Ejutla's principal center in a previously underutilized area may signal the growing importance of interaction and exchange with the Monte Albán polity, similar to the repositioning of the major regional center (San Ignacio) in the southern part of the Amatzinac River valley in eastern Morelos as a result of increasing interaction

TABLE 7.1. Population densities, component densities, and average site size in Ejutla and the Valley of Oaxaca in Monte Albán IIIA.

| | Oaxaca | Ejutla | Oaxaca without Monte Albán | Ejutla without San Joaquín |
|---|---|---|---|---|
| Population densities/km$^2$ | 57.3 | 28.4 | 49.5 | 16.0 |
| Component densities*/100 km$^2$ | 43.8 | 22.3 | 43.7 | 25.9 |
| Average site area* (ha) | 4.4 | 8.7 | 3.9 | 3.1 |
| Average site population* | 107 | 127 | 113 | 70 |

* Combined sites.

with Teotihuacan (Hirth, 1978, 1980; Hirth & Angulo, 1981). Closer links between the Ejutla populations and seats of power in Oaxaca may have fostered the rapid growth of San Joaquín as Monte Albán consolidated its hegemony over the southern extensions of the Central Valleys of Oaxaca.

With the new center at San Joaquín, a lattice of tiered centers extended from Monte Albán down through southern Valle Grande and well into the Ejutla Valley (Fig. 7.7; Appel, 1986; Feinman & Nicholas, 1988, p. 10, 1990a, p. 234; Kowalewski et al., 1989, p. 231). The location of the Ejutla Valley's new regional center closer to the low piedmont pass into the southern (Ocotlán) part of the Valley of Oaxaca also indicates that interaction between Oaxaca and Ejutla began to follow the Ocotlán corridor more than in any prior phase.

There also was greater integration within the Ejutla Valley. The three largest settlements—San Joaquín (in grid square S1E6), the Ejutla site (in grid square S2E7), and Taniche (in grid square S2E6)—were surrounded at close range by many small settlements (Fig. 7.6). Other, smaller centers formed an outer ring along the edges of the Ejutla region (Fig. 7.8). All but one (EJ-CA-CA-13, in grid square S4E9) are within 5–7 km of each other and within 5–8 km of one of the three largest sites. The two northernmost of these smaller centers also are within 5–7 km of like centers in southern Valle Grande.

One settlement in the outer ring, EJ-EJ-SMC-6 (IIIA-9, in grid square N2E6), was a small defensibly located site in Monte Albán II that became much larger in IIIA. That site appears to have grown at the expense of nearby Chichihualtepec (IIIA-11, in grid square N1E5), which was much smaller in IIIA. As we have pointed out in earlier chapters, Chichihualtepec had been an important (if small) community from the beginning of settled life in Ejutla but appears to finally have lost its previous significance with the growth of the new site on the escarpment and the new center at San Joaquín. Chichihualtepec had previously been an important node for interaction with valley centers through the southern extension of the Atoyac River. In Monte Albán IIIA, however, when interaction occurred more through the Ocotlán corridor—an avenue near to and likely monitored by the new center at San Joaquín—this earlier settlement lost its privileged position.

Greater integration with the Valley of Oaxaca, however, may not have been without some conflict. The establishment of terrace sites in Monte Albán IIIA was accompanied by a large increase in the number of defensibly located sites in Ejutla, most of which ring northern and eastern Ejutla (Fig. 7.9), including the aforementioned terrace site at EJ-EJ-SMC-6. EJ-EJ-LOG-5 (IIIA-8, in grid square N1E5; Appendix IX, Fig. 14), a small site located on a high promontory in northwestern Ejutla, was part of this ring of sites. This highly defendable site consists of five long stone walls that enclose the top of this steeply sloping hilltop. With only one house foundation mapped at the site, it may have served as a military outpost. Another site on the southeastern edge of the Ejutla Valley, EJ-CA-CA-13 (IIIA-135, in grid square S4E9, discussed further below), guarded a low pass into the adjacent Río Grande drainage to the east. The small centers and other defendable sites ringing the core of the Ejutla Valley settlement may have been established to clearly demarcate this cluster of settlement from other sectors of the valley. Local elite in Ejutla may have tried to preserve some of the region's autonomy or acted on defensive concerns from locations both inside and external to the valley system. The new largest site in the Sola Valley also was a terrace site, defensibly situated above the principal pass into the valley from the east (Balkansky, 2002, pp. 53–54). The southern boundary of Ejutla was less defended, although the possibility remains that terrace sites may be found when presently unstudied hilltop and mountain regions farther south are eventually surveyed.

Although the survey coverage of the Miahuatlán Valley is less complete than for Ejutla, Sola, or the Valley of Oaxaca, the lack of similar changes in Miahuatlán may help define the southern limit of the Monte Albán state in IIIA. According to Markman (1981, p. 67), settlement patterns in the Miahuatlán Valley continued to be similar to those of Monte Albán II, even though, as in Oaxaca and Ejutla, there were more sites in piedmont and mountain settings. In contrast to Ejutla and Sola, where major new centers were established in areas with only sparse prior occupation, the large site beneath contemporary Miahuatlán continued to be the dominant center. In addition, the buildup of population in southern Valle Grande, Ejutla, and Sola does not appear to have continued into Miahuatlán. Northern Miahuatlán remained almost devoid of settlement, as was southern Ejutla. Several Monte Albán IIIA settlements in northern Miahuatlán were located in defendable

TABLE 7.2. Number of sites, occupied area, and average site size for Ejutla and Valley of Oaxaca subregions in Monte Albán IIIA.

| | No. of sites* | Occupied area (ha) | Average site size (ha) |
|---|---|---|---|
| Etla | 54 | 242.9 | 4.5 |
| Central | 47 | 569.8 | 12.1 |
| Central without Monte Albán | 46 | 94.8 | 2.1 |
| Northern Valle Grande | 154 | 1,182.9 | 7.7 |
| Northern Valle Grande without Jalieza | 153 | 772.8 | 5.1 |
| Southern Valle Grande | 222 | 750.1 | 3.4 |
| Western Tlacolula | 302 | 965.9 | 3.2 |
| Eastern Tlacolula | 150 | 369.6 | 2.5 |
| Ejutla | 115 | 1,003.1 | 8.7 |
| Ejutla without San Joaquín | 114 | 393.9 | 3.5 |

* Combined sites.

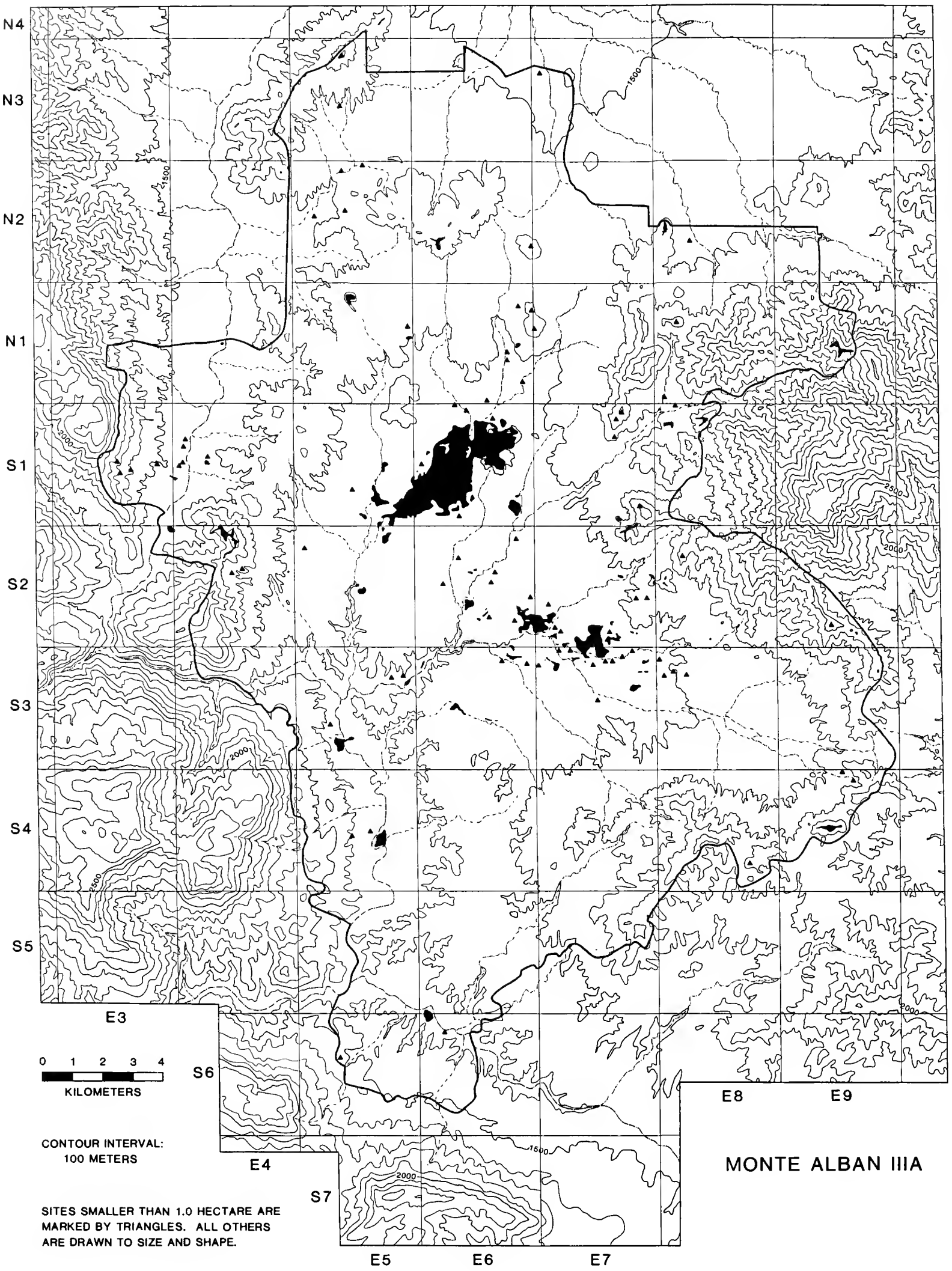



FIG. 7.6. Monte Albán IIIA settlement in the Ejutla Valley.

hilltop locations. Even today, this area is sparsely settled, has poor soils, and has limited water sources. Although other environmentally poor areas in Oaxaca were at times densely settled, the greater distance from the integrated centers of the Monte Albán polity may have made settlement in northern Miahuatlán/southern Ejutla much more risky and difficult to support, allowing Miahuatlán to retain greater autonomy than Ejutla. Even though the Ejutla Valley was still not a part of the Oaxaca core cluster, it was tied into Monte Albán's political and economic system. Miahuatlán was more peripheral and

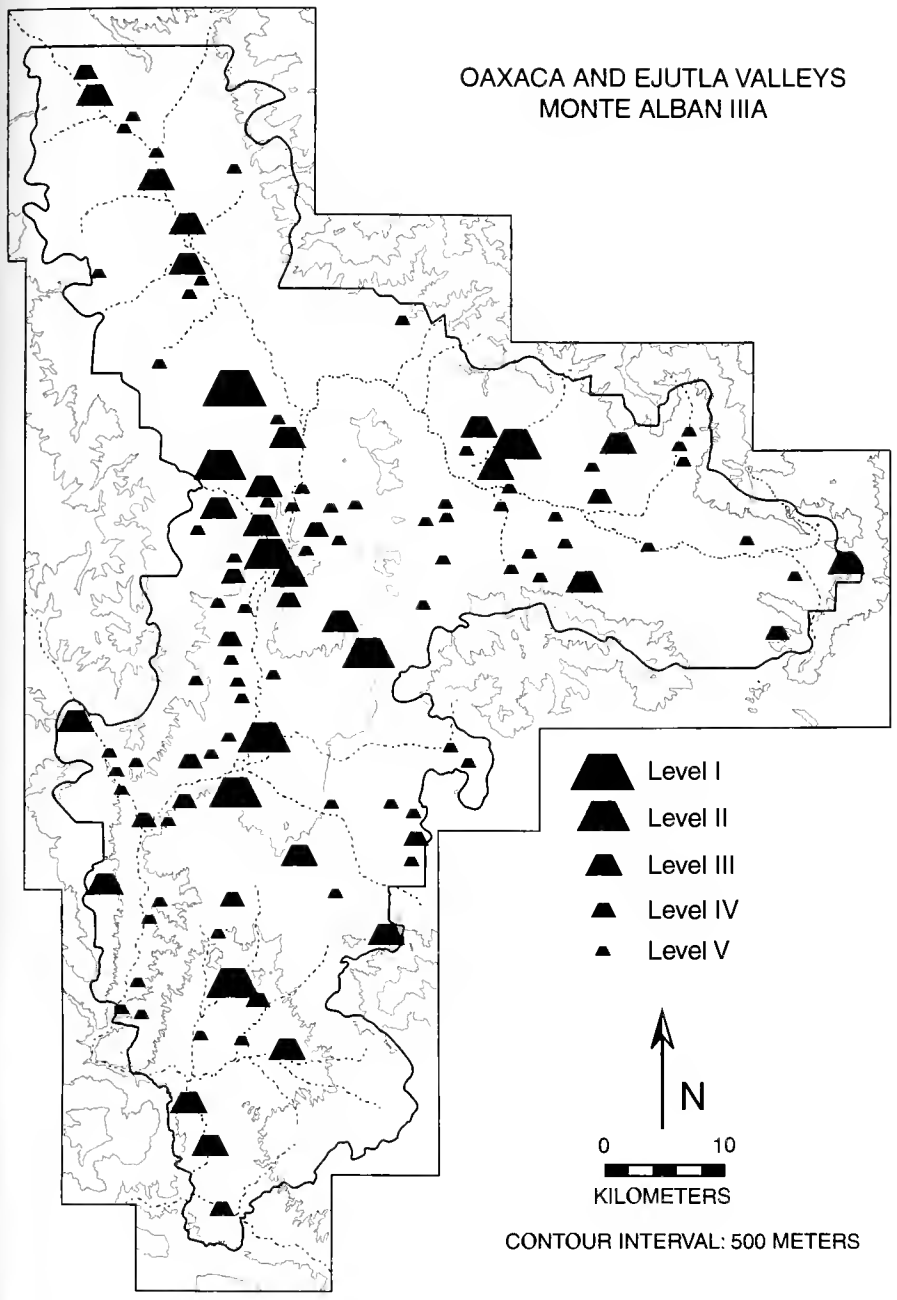



FIG. 7.7. Monte Albán IIIA mound centers in Ejutla and the Valley of Oaxaca.

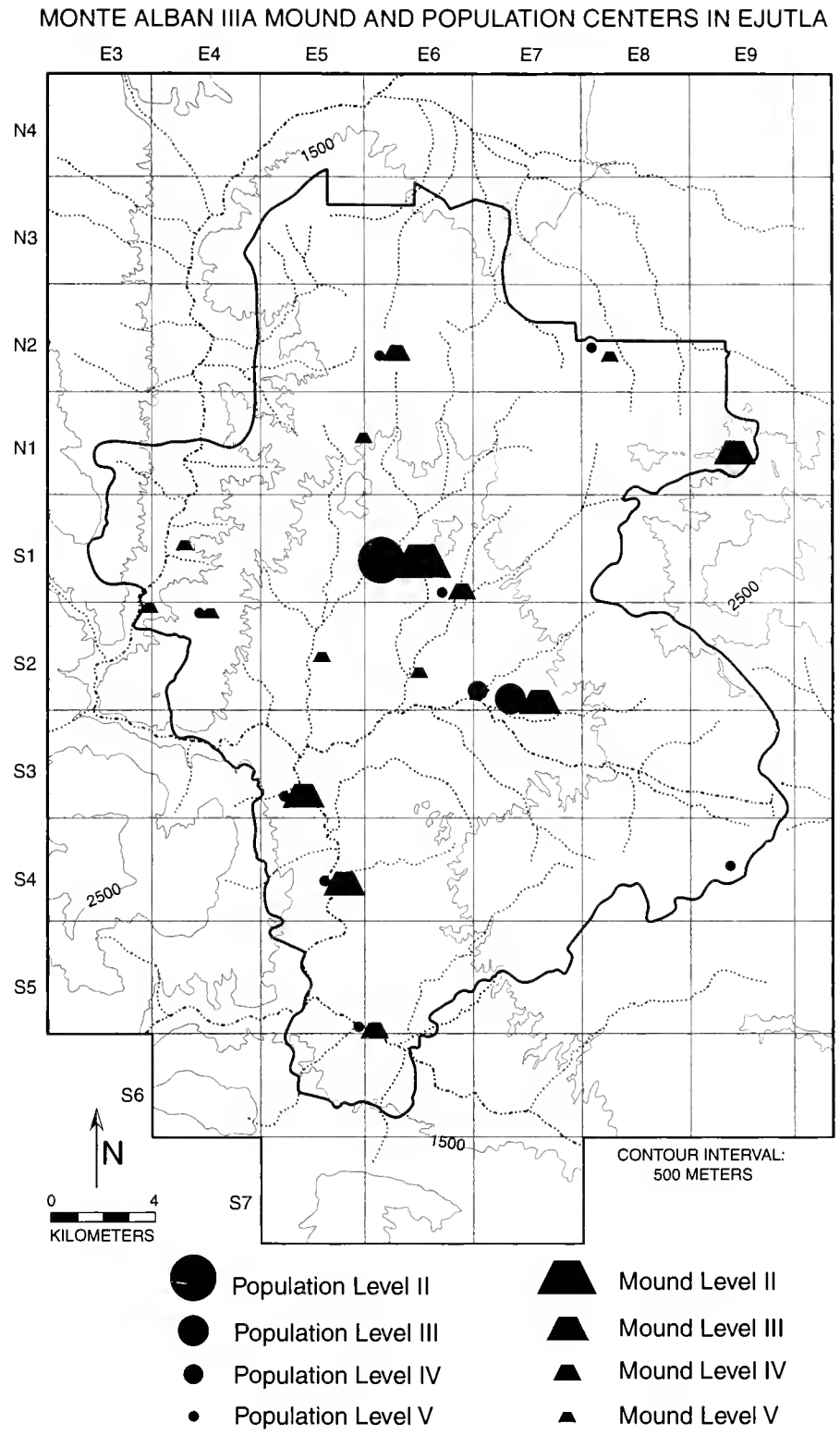



FIG. 7.8. Monte Albán IIIA mound and population centers in Ejutla.

may never have been linked to Monte Albán to the degree that Ejutla was, although the Early Classic period ceramic complex in Miahuatlán, including a well-represented sample of gray bowls with exterior carving (G-23s), indicates that the region was still at least loosely affiliated with the core Zapotec state centered at Monte Albán (Markman, 1981, p. 106).

## Terrace Sites in Oaxaca

Monte Albán was the Valley of Oaxaca's first hilltop terrace site (Blanton, 1978), and with its foundation in Monte Albán Early I (ca. 500 BC), a new kind of settlement with ramifications for community organization and labor mobilization was formed. Within a few hundred years, other, smaller terrace sites were constructed elsewhere in the valley and throughout the Southern Highlands (Spencer & Redmond, 1997, pp. 600–601; Feinman & Nicholas, 1999, p. 178; Balkansky et al., 2000, p. 373; Balkansky, 2002, p. 41; Kowalewski et al., 2009, p. 299), and by the Early Classic period, hilltop terrace sites were significant features of the landscape in the Valley of Oaxaca. More than 100 hilltop terrace sites were recorded during the regional surveys of the Valley of Oaxaca (Blanton et al., 1982; Kowalewski et al., 1989), and we recorded another 18 in Ejutla (Table 7.3). Terrace excavations at Monte Albán (Winter, 1974; Gonzaléz Licón, 2003) and subsequently in a series of hilltop terrace sites in the Valley of Oaxaca, at Jalieza (Finsten, 1995; Casparis, 2006; Elson, 2011), Macuilxochitl (Faulseit, 2010), Cerro Tilcajete (Elson, 2007), El Palmillo (Feinman et al., 2002, 2008; Feinman & Nicholas, 2004b, 2009), and the Mitla Fortress (Feinman et al., 2010), have confirmed that the artificially flattened terraces were constructed largely to house residences (Fig. 7.4).

Most hilltop terrace sites in the Valley of Oaxaca are located at some distance from modern communities and the valley floor and have not been heavily utilized since the Spanish Conquest. Because of the visibility of the stone retaining walls of residential terraces on uninhabited slopes and often the remains of domestic architecture, these sites have the potential to provide significant information on the nature and size of residential units and the internal organization of settlements that is not possible from valley-floor sites. The size of houselots (the residential terraces) and, at times, even houses can be measured, and artifacts representing a range of productive activities can be tied to specific houses. Ramps

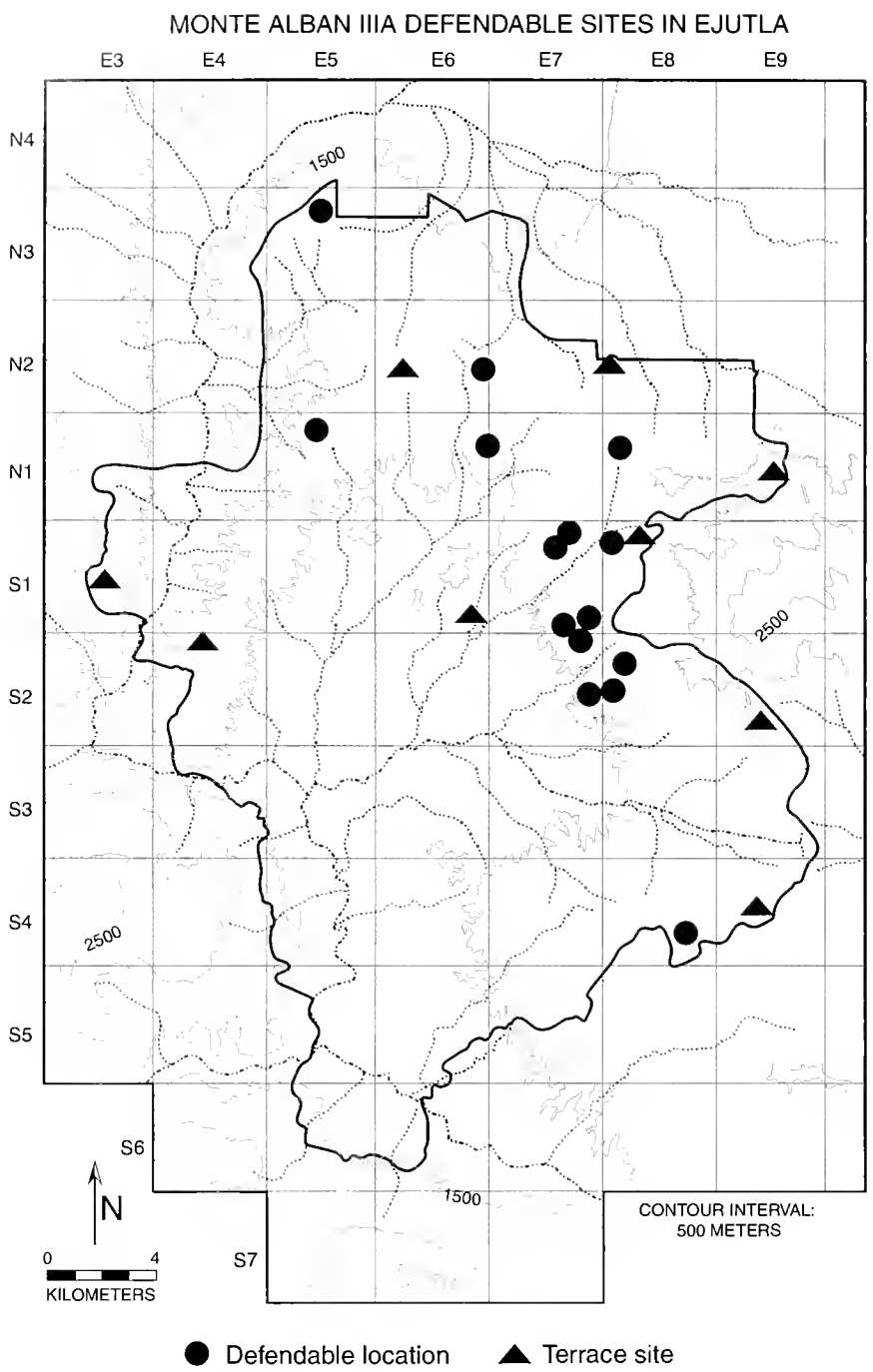



FIG. 7.9. Monte Albán IIIA sites in defendable locations in Ejutla.

and entries into terraces and pathways between them can be mapped, revealing internal site organization.

Unfortunately, though, not all terraces are equally visible or well preserved. As artificially flattened spaces on uninhabited steep slopes, they often were attractive places for 20th-century farmers. At some sites, farmers have dismantled residential architecture and terrace sidewalls to make plowing easier and constructed new walls above ancient retaining walls. In less steep site areas and on terraces with lower retaining walls, heavy plowing (and it subsequent abandonment and erosion) has left only traces of the earlier terraces. In drier parts of the valley, especially eastern Tlacolula, many terrace sites are overgrown with dense, thorny vegetation that largely obscures the terraces. In a few cases, the extent of these sites was mapped without recording individual terraces. Nevertheless, hilltop terrace sites form a robust class of settlement that can be compared across time and space in regard to settlement location, size, and function.

Terrace sites share several common features. They are situated on hilltops above the valley floor often removed from the best patches of farmland, they comprise densely packed houses constructed on artificially flattened terraces, and all have some defensive characteristics or are situated in defendable settings (Elam, 1989; Feinman & Nicholas,

TABLE 7.3. Ejutla Valley terrace site summary.

| Field site no. | Grid square | Phases | No. of terraces |
|---|---|---|---|
| EJ-CA-CA-1 | S2E9 | IIIA, IV, V | 140 |
| EJ-CA-CA-13 | S4E9 | IIIA, V | 28 |
| EJ-EJ-EA-6 | S4E8 | V | 6 |
| EJ-EJ-EC-4 | S2E8 | V | ? |
| EJ-EJ-EJ-27 | S2E8 | V | 54 |
| EJ-EJ-EJ-30 | S2E8 | V | 48 |
| EJ-EJ-EV-2 and 13 | N1E7 | IV, V | 20 |
| EJ-EJ-LO-7 | S1E8 | V | 3 |
| EJ-EJ-LO-8 | S1E8 | IIIA | 4 |
| EJ-EJ-SCN-5 | N1E3 | V | 5 |
| EJ-EJ-SJ-2 | S1E6 | IIIA, V | 6 |
| EJ-EJ-SMC-6 | N2E6 | IIIA, V | 19 |
| EJ-LC-AE-7 | S2E4 | V | 5 |
| EJ-SAZ-SAZ-4 | S1E3 | IIIA, V | 8 |
| EJ-SML-SML-14 | S1E4 | IV | 5 |
| EJ-SML-SML-16 | S2E4 | IIIA, IV, V | 59 |
| EJ-SML-SML-22 | S1E4 | IV | 5 |
| OC-SJP-SJP-108 | N2E8 | IIIA | 64 |
| OC-SJP-SJP-129 | N1E9 | IIIA | 8 |

2004a, pp. 6–8; Kowalewski et al., 2006, p. 204). These settlements were quite variable, though, in size, form, and their role in the larger regional systems of which they were a part. The terrace sites in Ejutla and the Valley of Oaxaca range from small compact settlements of fewer than 10 terraces to large urban centers of 2,000 or more terraces (Monte Albán and Jalieza), with populations as high as 10,000–20,000. Small terrace sites, however, are the norm in both valleys; the greatest difference between the two valleys is that there are no really large terrace sites in Ejutla. For example, 15% of the mapped terrace sites in Oaxaca have more than 150 terraces; none of the terrace sites in Ejutla are above that threshold (Fig. 7.10). The larger terrace sites in Oaxaca, with their higher populations, likely were the seats of greater sociopolitical activity than occurred at other, smaller terrace sites in both valleys.

The size of the residential terraces also varied greatly, both within and between sites. Average terrace size per site ranges from 30 $m^2$ to over 1,000 $m^2$. In spite of that wide range, the median terrace size at half the sites where we were able to map terraces was 100 $m^2$ or smaller. Median terrace size is variable across the region (Fig. 7.11). Terraces tend to be larger at sites in Central and Etla (where median terrace size at all sites is greater than 100 $m^2$). In Ocotlán and the Valle Grande, median terrace size is greater than 100 $m^2$ at approximately two-thirds of the terrace sites, whereas in Tlacolula and Ejutla, median terrace size is less than 100 $m^2$ at two-thirds of the sites. The smaller terrace size in the two subvalleys most peripheral to Monte Albán may reflect the different roles of these sites in the larger system, possibly a lower standard of living (greater impoverishment), or both.

Except for Monte Albán, earlier (Formative period) terrace sites tend to be smaller, often with concentric rings of terraces circling a small, low knob (Feinman & Nicholas, 1999, pp. 180–181; Kowalewski et al., 2006, pp. 204–205). Formative period terrace sites were located in low numbers in all subareas of the Valley of Oaxaca, with the greatest number in Etla. Many of the early terrace sites were located on hilltops internal to the valley as opposed to near its topographic edges.

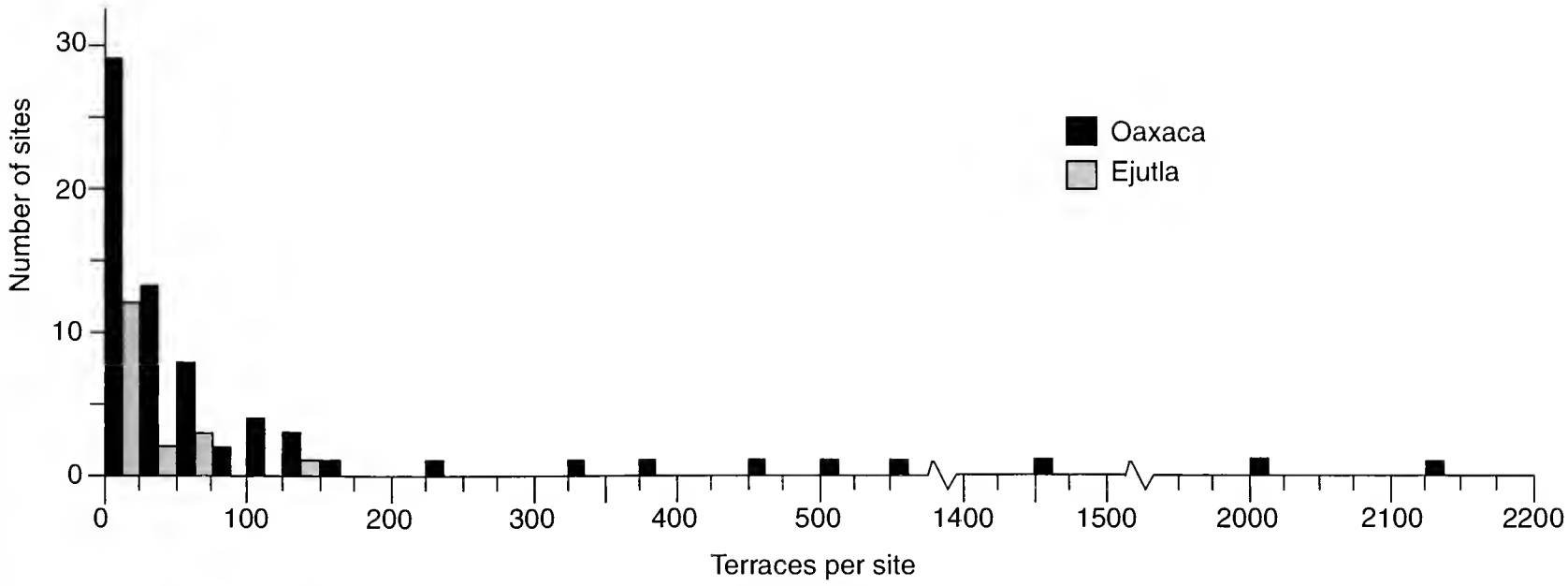



FIG. 7.10. Number of terraces at terrace sites in Ejutla and the Valley of Oaxaca.

By the Early Classic, many terrace sites were much larger, comprising rows or strings of terraces behind shared, high stone retaining walls that stretched along ridgetops and spread down the slopes (Feinman & Nicholas, 2004a, pp. 118–119; Kowalewski et al., 2006, p. 206). Our subsequent excavations at El Palmillo, the largest hilltop terrace site in the eastern Valley of Oaxaca, revealed that the construction of strings of artificially flattened terraces behind shared stone retaining walls required significant labor and multihousehold cooperation and organization to coordinate the work (Feinman et al., 2002, pp. 271–272; Kowalewski et al., 2006, p. 207).

Hilltop terrace sites became much more imposing and numerous features in the Valley of Oaxaca during the Early Classic in terms of both their physical size and the percentage of the regional population that resided in them. Not only did the number of terrace sites more than double, but many of these settlements housed significant populations, including Jalieza and El Palmillo, with populations of 12,000 and 6,000, respectively. Outside the regional capital, the percentage of the valley's population residing in terrace sites doubled, from 30% to 62%. Coupled with the large increase in the population between Monte Albán II and IIIA, the number of people residing in terrace sites, outside of Monte Albán, increased from around 8,000 to over 63,000. Including the capital raises the number to almost 80,000, or 68% of all valley residents. Such a high percentage of the population living in nucleated communities, often not located near good farmland and in drier parts of the valley, has implications for internal community organization, how the inhabitants of these large settlements made their living, and the nature and degree of intersettlement connectivity.

The distribution of terrace sites across the region also shifted dramatically between Monte Albán II and IIIA, from an earlier focus in Etla to the southern and eastern edges of the valley (Table 7.4). The first terrace sites in the Ejutla Valley were constructed coincident with the buildup of population in defensibly located hilltop locations along the southern edge of the Valley of Oaxaca. Although only 15% of Ejutla's population resided in terrace sites (much lower than in Oaxaca), their initial construction during Monte Albán IIIA represents an important settlement pattern change that reflects shifts in Ejutla's relationship with the Valley of Oaxaca.

As centers of dense (if not always large) populations, hilltop terrace sites played many roles in their respective regional systems, as loci of civic-ceremonial/political activities and specialized nonagricultural production, and/or as military garrisons (Kowalewski et al., 1989, pp. 242–243; Feinman & Nicholas, 2004a, p. 132). These functions are not mutually exclusive, and most hilltop terrace sites, by the very nature of their locations, likely had some concern with defense. The larger terrace sites were prominent places in the regional site hierarchy, even though no other site in the valley had the

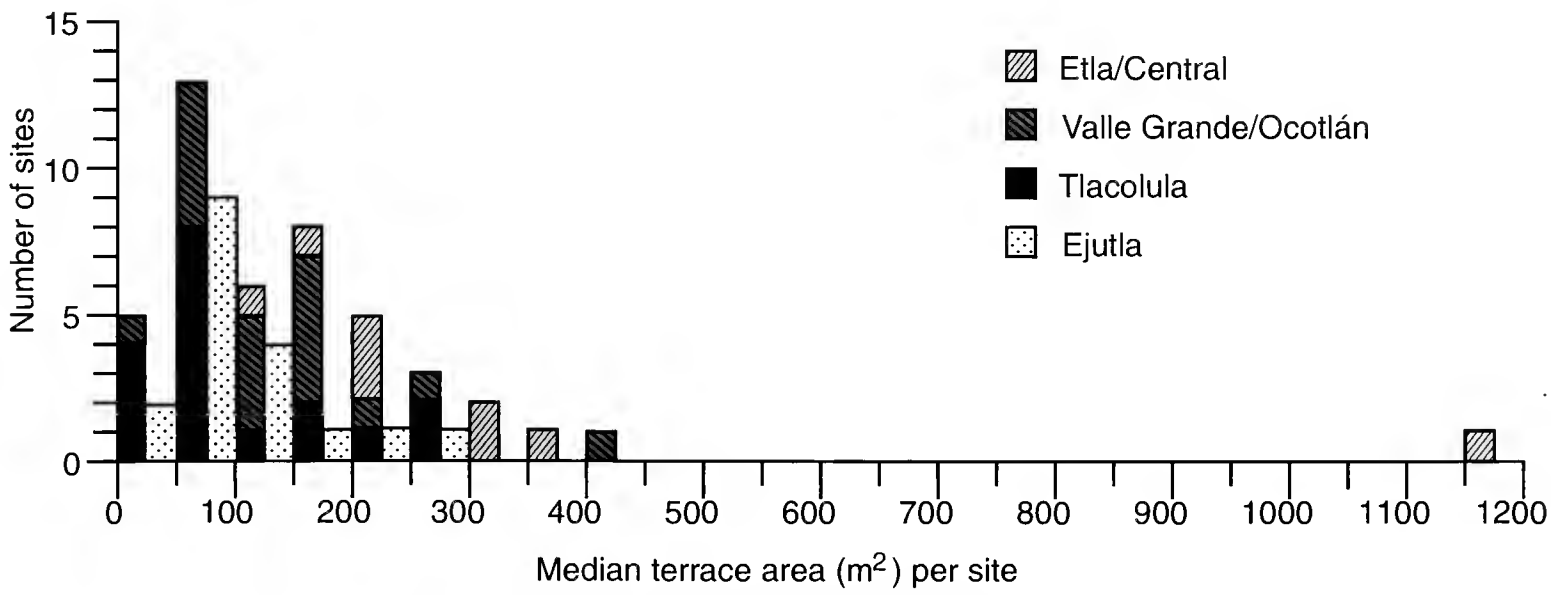



FIG. 7.11. Median terrace sizes in Ejutla and the three arms of the Valley of Oaxaca.

TABLE 7.4. Summary of Monte Albán II and IIIA terrace sites in Oaxaca and Ejutla.

| Valley | Subarea | No. of terrace sites | Terrace site population | Total population | % residing in terrace sites | No. of mapped terraces |
|---|---|---|---|---|---|---|
| Monte Albán II | | | | | | |
| Ejutla | Ejutla | 0 | 0 | 2,184 | 0.0 | 0 |
| Oaxaca | Etla | 6 | 5,610 | 8,266 | 67.9 | 196 |
| Oaxaca | Central | 2 | 14,530 | 18,704 | 77.7 | ? |
| Oaxaca | Valle Grande/Ocotlán | 4 | 394 | 7,088 | 5.6 | 45 |
| Oaxaca | Tlacolula | 9 | 2,047 | 7,867 | 26.0 | 596 |
| Oaxaca subtotal | | 21 | 22,581 | 41,925 | 53.9 | 837 |
| Total | | 21 | 22,581 | 44,109 | 51.2 | 837 |
| Monte Albán IIIA | | | | | | |
| Ejutla | Ejutla | 9 | 2,199 | 14,656 | 15.0 | 199 |
| Oaxaca | Etla | 2 | 2,504 | 5,492 | 45.6 | 20 |
| Oaxaca | Central | 1 | 16,507 | 18,342 | 90.0 | 1,196 |
| Oaxaca | Valle Grande/Ocotlán | 23 | 28,541 | 50,520 | 56.5 | 2,074 |
| Oaxaca | Tlacolula | 26 | 32,340 | 43,389 | 74.5 | 3,208 |
| Oaxaca subtotal | | 52 | 79,892 | 117,743 | 67.9 | 6,498 |
| Total | | 61 | 82,091 | 132,399 | 62.0 | 6,697 |

monumentality of Monte Albán's public architecture. Large and small terrace sites often had surface evidence of specialized nonagricultural activities, especially in Tlacolula. Terrace sites that may have served as military garrisons generally had many fewer (and smaller) terraces and were situated in higher, less accessible locations, sometimes above access or trade corridors. Below we focus on the Early Classic terrace sites in the Ejutla Valley and their role/place in the regional system.

### Monte Albán IIIA Terrace Sites in Ejutla

We recorded Monte Albán IIIA ceramics on terraces at nine sites in Ejutla (Table 7.5 and Fig. 7.9). The two terrace sites located along the northern boundary of the Ejutla region are similar in terms of location, temporal occupation, and the arrangement of terraces. OC-SJP-SJP-108 (IIIA-34, in grid square N2E8; Appendix IX, Fig. 44) is defensibly situated on a middle piedmont spur that overlooks the low piedmont of southern Ocotlán and northern Ejutla. The site consists of 64 small terraces compactly arranged along the top and sides of the spur, with one mound at the very top. Although the mound was reoccupied in Monte Albán V, the rest of the site was not. The minimal public architecture at the site would seem to limit its role in regional political activities, although its estimated population (502) relative to other sites in Ejutla is high, and it may have served as a low-level civic-ceremonial center.

The other site, Mogote de las Azucenas (IIIA-9, in grid square N2E6; Fig. 7.12 and Appendix IX, Fig. 22), is smaller, with 19 terraces on top of a high ridge that projects southward from the edge of a steep escarpment in northern Ejutla. Although the escarpment blocks the view to the north, this defensibly located site has an excellent view of most of the Ejutla Valley to the south. Scattered among the terraces are seven small structures and several house foundations. On most of the terraces, we observed only Monte Albán IIIA ceramics, although Monte Albán II and V ceramics were recorded on two of the structures, and V ceramics were found on two terraces.

Two terrace sites located in western Ejutla, on opposites sides of the Atoyac River, are very different from each other. EJ-SML-SML-16 (IIIA-109, in grid square S2E4; Fig. 7.13 and Appendix IX, Fig. 38) is defensibly situated on a high piedmont ridge above the Atoyac River where that waterway first exits the upper basin prior to reentering the main Ejutla Valley to the south. The site consists of 59 terraces dispersed on the western slope of the ridge and several defensive walls. Heavy vegetation on the steep slopes of the ridge impeded mapping, so the total terrace count at the site could be higher than we recorded. Three large, very low, connected platforms at the top of the ridge are not associated with any other architecture. Like OC-SJP-SJP-108, this site may have been a low-level civic-ceremonial center. All the terraces at this site also were occupied in either Monte Albán IV or V. This site has an excellent view of El Choco to the northwest, a large terrace site that also was one of the larger civic-ceremonial centers in southern Valle Grande in IIIA (Fig 7.4). Together, these two sites may have monitored or endeavored to control this passageway into Oaxaca. The other terrace site in western Ejutla, EJ-SAZ-SAZ-4 (IIIA-98, in grid square S1E3; Appendix IX, Fig. 34), comprises eight very closely spaced terraces of varying sizes on a sloping ridge in the high piedmont west of the Atoyac River. The terraces also were occupied in Monte Albán V.

Four additional terrace sites are located along the eastern limits of the Ejutla Valley. The largest one, EJ-CA-CA-13 (IIIA-135, in grid square S4E9; Fig. 7.14 and Appendix IX, Fig. 2), with 28 terraces and two defensive walls, is defensibly located on the eastern end of the high piedmont ridge that divides the Ejutla Valley from Miahuatlán to the south. The site has an excellent view of both regions. Most of the site is single-component IIIA, although a few terraces were reoccupied in Monte Albán V. The high frequency of unusual and production-related artifacts (abundant obsidian, chert tools and flakes, marine shell, a spindle whorl, sherd disks, and urn and figurine fragments) on the site indicates that specialized nonagricultural craftwork was carried out on a number of terraces. There is a chert source on site.

To the north, on the other side of a low pass that connects the Ejutla Valley to the Rio Grande drainage to the east, is another terrace site, Coatecas (IIIA-91, in grid square S2E9; Appendix IX, Fig. 1). Although this site was the largest terrace site in Ejutla in Monte Albán V, we found IIIA ceramics on only three terraces that surround a plaza and one mound on the very top of the ridge (Fig. 7.15). From this very defendable

TABLE 7.5. Monte Albán IIIA terrace sites in the Ejutla Valley survey region.

| Site no. | Field site no. | Population | Terraces | Average length (m) | Average width (m) | Average area ($m^2$) | No. with items | % with items | Role | Defensive walls | Defendable location | Mound hierarchy | Population hierarchy | Other phases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8-34 | OC-SJP-SJP-108 | 502 | 64 | 13.6 | 5.6 | 78.1 | 7 | 10.9 | defense | ? | yes | — | V | — |
| 8-109 | EJ-SML-SML-16 | 497 | 59 | 18.6 | 5.0 | 105.6 | 0 | 0.0 | defense | yes | yes | V | V | IV, V |
| 8-135 | EJ-CA-CA-13 | 255 | 28 | 26.1 | 7.0 | 207.6 | 18 | 64.3 | defense/production | yes | yes | — | V | V |
| 8-9 | EJ-EJ-SMC-6 | 241 | 19 | 18.2 | 6.6 | 133.9 | 1 | 5.3 | defense | ? | yes | IV | V | V |
| 8-37 | OC-SJP-SJP-129 | 184 | 8 | 16.9 | 3.9 | 60.1 | 1 | 12.5 | defense | yes | yes | III | VI | — |
| 8-98 | EJ-SAZ-SAZ-4 | 68 | 8 | 17.1 | 7.4 | 133.3 | 0 | 0.0 | defense | no | yes | — | — | V |
| 8-31 | EJ-EJ-SJ-2 | 320 | 6 | 19.2 | 6.8 | 126.5 | 1 | 16.7 | production | no | no | IV | V | V |
| 8-43 | EJ-EJ-LO-8 | 102 | 4 | 27.5 | 7.0 | 203.3 | 0 | 0.0 | defense | no | yes | — | VI | — |
| 8-91 | EJ-CA-CA-1 | 30 | 3 | 29.2 | 4.5 | 143.7 | 1 | 33.3 | defense | ? | yes | — | — | IV, V |

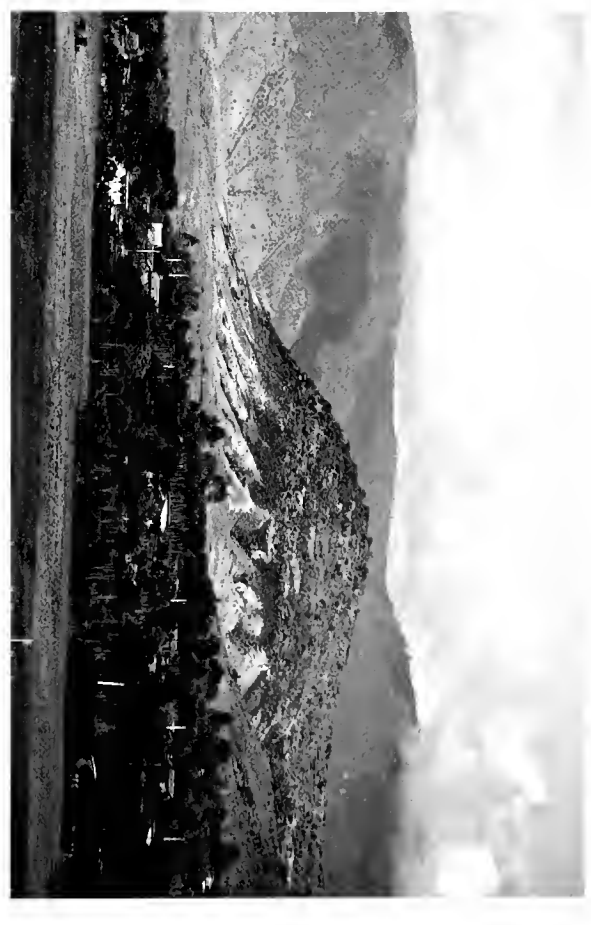


FIG. 7.12. Mogote de las Azucenas (EJ-EJ-SMC-6) terrace site on knob above Monte del Toro, in northern Ejutla.

location in the high piedmont, the residents of the site had an excellent view of southern and central Ejutla. We recorded a high frequency of projectile points at both Coatecas and EJ-CA-CA-13, likely reflecting, in conjunction with inaccessible locations, defensive/military functions.

We recorded eight dispersed terraces at OC-SJP-SJP-129 (IIIA-37, in grid square N1E9; Fig. 7.16 and Appendix IX, Fig. 47), most of which are associated with one of two mound complexes at this single-component IIIA site (we describe the architecture below). Locating and mapping terraces on the steep, heavily vegetated mountain slopes where the site is situated was difficult, though, and there possibly are more terraces than we mapped. There also are several defensive walls. Although the terraces are not the defining feature of this site, its high, defendable location and abundance of projectile points and other chipped stone implements (including two obsidian flakes that were shaped to fit into a club) point strongly to military actions. The fourth terrace site along Ejutla's eastern limit, EJ-EJ-LO-8 (IIIA-43, in grid square S1E8; Appendix IX, Fig. 12), is small and compact, with only four terraces. Although there is a later V occupation at this defensibly located site in the middle piedmont, none of the terraces were reoccupied.

The final site with terrace occupation in IIIA, EJ-EJ-SJ-2 (IIIA-31, in grid square S1E6; Appendix IX, Fig. 19), is a nondefendable site located on a low hill in the low piedmont of

FIG. 7.13. EJ-SML-SML-16 terrace site on ridgetop in western Ejutla.

FIG. 7.14. EJ-CA-CA-13 terrace site on ridgetop at southern edge of the Ejutla Valley.

central Ejutla, just above a tributary of the Ejutla River. Six small terraces are associated with a small mound complex. One low stone wall at the site does not appear to be defensive. The site continued to be occupied in Monte Albán IV and V. The presence of spindle whorls and high frequencies of poorly made G-23 pottery indicate that specialized production activities occurred at the site.

### Comparison of Monte Albán IIIA Terrace Sites in Ejutla and Oaxaca

As noted above, the construction of the first terrace sites in the Ejutla Valley during Monte Albán IIIA was timed with the establishment of a ring of hilltop terrace sites along the south and southeastern fringes of the Valley of Oaxaca that continues into Ejutla from Ocotlán and Tlacolula without a gap (Fig. 7.4). They also continue down the western side of the Valle Grande into western Ejutla, to the point where the Atoyac River exits the upper basin prior to reentering the main Ejutla Valley to the south. The presence of several small IIIA terrace sites along the Ocotlán/Ejutla boundary raises the possibility that the integration of Ejutla into the Valley of Oaxaca political system was fluid and not always harmonious. Many interior terrace sites, especially in Tlacolula, are located near the edges of settlement clusters, again indicating that the

FIG. 7.15. Top ridge of Coatecas (EJ-CA-CA-1) terrace site at eastern edge of the Ejutla Valley.

FIG. 7.16. Hilltop setting of OC-SJP-SJP-129 terrace site, in northeastern Ejutla.

integration of the entire area was not completely free of hostility, especially when you factor in that we measure time in chronological periods that lasted for centuries.

Monte Albán IIIA terraced sites in Ejutla, like those in Oaxaca (Kowalewski et al., 1989, pp. 240–245), were internally diverse in size and location. As we saw for the full terrace site sample, the IIIA terrace sites in Ejutla also were smaller (Tables 7.5 and 7.6). The two largest IIIA terraee sites in Ejutla, both in the northern part of the region, had around 60 terraces, compared to almost 700 at Jalieza and over 1,000 at Monte Albán and El Palmillo. Whereas a third of all terraces sites in the larger valley had more than 100 residential terraces, half of the hilltop sites in Ejutla had fewer than 10 terraces.

The larger IIIA terrace sites in the Valley of Oaxaca were important civic-ceremonial centers; Tlacochahuaya and El Palmillo (in Tlacolula), Jalieza (in Ocotlán), and Monte Albán (in the Central subarea) all had populations of 5,000 or more. Specialized nonagrieultural production also was evident at most of the larger terrace sites in Oaxaca, especially in Tlacolula and Ocotlán (Kowalewski et al., 1989, pp. 242–243). One way we identified specialized production was the number of artifaets other than potsherds or building stone that we observed on each terrace, including such items as chipped stone tools and debris, ground stone objeets, projectile points, obsidian, kilnwasters, sherd disks, spindle whorls, figurine and urns fragments, and marine shell ornaments and debris. At some sites, over half the terraces had such materials indicative of production activities (Kowalewski et al., 1989, p. 242). This dispersal would indicate that production occurred in houses and not in workshops. We take up the implications of household-level production (Feinman & Nicholas, 2004b, 2007a,b,c, 2010a; Feinman, 2006; Feinman & Garraty, 2010) later in this chapter.

The populations of the largest IIIA terrace sites in the Ejutla Valley were much lower, around 500, comparable to low-level civic-ceremonial centers in Oaxaca. Given the small size and often inaccessible locations of other IIIA terrace sites in Ejutla (often a walk of one to two hours from the valley floor), they likely were primarily defensive redoubts (or locales to monitor interregional trade corridors), like the smaller terrace sites in Ocotlán and Tlacolula, whose primary role was in strategic defense (Kowalewski et al., 1989, p. 243). One-third of the Ejutla terrace sites have standing defensive walls, and three-quarters are defensibly located. Several hilltop sites in Ejutla

TABLE 7.6. Monte Albán IIIA terrace sites in the Valley of Oaxaca.*

| Subarea | Field site no. | Phase no. | Population | No. of terraces | Average terrace area ($m^2$) |
|---|---|---|---|---|---|
| Etla | ET-SLC-GH-1 (Loma del Trapiche) | 1-8-56 | 715 | 20 | 2,895.0 |
| Etla | ET-SS-SS-1 (Suchilquitongo) | 1-8-2 | 1,789 | ? | — |
| Central | Monte Albán | 0-8-1 | 16,507 | 1,196 | — |
| Ocotlán | OC-STJ-STJ-1,4,5 (Jalieza) | 3-8-136 | 12,835 | 698 | 704.5 |
| Ocotlán | OC-AO-AO-2 | 5-8-56 | 220 | 22 | 119.8 |
| Ocotlán | OC-MO-MO-10 (Magdalena Ocotlán) | 5-8-119 | 443 | 36 | 105.0 |
| Ocotlán | OC-SAZ-SAZ-6 | 5-8-4 | 98 | 14 | 72.2 |
| Ocotlán | OC-SD-LS-7 | 5-8-48 | 330 | 39 | 103.6 |
| Ocotlán | OC-SJP-EP-8 (S. J. Progreso) | 5-8-106 | 1,208 | ? | — |
| Ocotlán | OC-SJT-PG-1 | 5-8-62 | 1,051 | 107 | 414.4 |
| Ocotlán | OC-SJT-PG-9 (Praxedis Guerrero) | 5-8-93, 94 | 990 | 117 | 177.1 |
| Ocotlán | OC-TIL-TIL-1 (Tilquiapan) | 5-8-43 | 2,746 | 124 | 317.5 |
| Ocotlán | OC-TIL-TIL-4 | 5-8-41 | 240 | 24 | 428.0 |
| Tlacolula | OC-STJ-SCJ-1 | 4-8-92, 503 | 1,168 | 71 | 156.7 |
| Tlacolula | OC-STJ-SCJ-4 (S. C. Jalieza) | 4-8-100 | 2,153 | ? | — |
| Tlacolula | TL-MAT-MAT-80 | 4-8-496 | 415 | 26 | 39.3 |
| Tlacolula | TL-MAT-MAT-81 (El Palmillo) | 4-8-154 | 6,195 | 1,452 | 44.4 |
| Tlacolula | TL-MIT-MIT-2 (Mitla Fortress) | 4-8-440 | 1,456 | 418 | 43.4 |
| Tlacolula | TL-MT-MT-100 | 4-8-258 | 80 | 7 | 159.4 |
| Tlacolula | TL-MT-MT-14 | 4-8-256 | 18 | ? | — |
| Tlacolula | TL-MT-MT-15 | 4-8-257 | 134 | 16 | 91.4 |
| Tlacolula | TL-SAV-SAV-9 | 4-8-278 | 67 | 6 | 543.0 |
| Tlacolula | TL-SBQ-SBQ-10 (Quialana) | 4-8-388 | 1,575 | ? | — |
| Tlacolula | TL-SJT-SJT-50 | 4-8-91 | 608 | 80 | 130.4 |
| Tlacolula | TL-SJT-SJT-6 (Teitipac) | 4-8-74 | 1,076 | 85 | 297.4 |
| Tlacolula | TL-SLA-SLA-2 (Guirún) | 4-8-482 | 1,772 | 280 | 110.6 |
| Tlacolula | TL-SLQ-SLQ-8 (Quiavini) | 4-8-415 | 1,273 | 19 | 254.2 |
| Tlacolula | TL-SST-SST-23 | 4-8-66, 67 | 822 | 48 | 289.6 |
| Tlacolula | TL-SST-SST-24 | 4-8-24 | 46 | ? | — |
| Tlacolula | TL-SST-SST-30 | 4-8-57, 58 | 282 | 13 | — |
| Tlacolula | TL-TCH-MAC-1 (Guadalupe) | 4-8-160, 162 | 2,218 | 66 | 437.2 |
| Tlacolula | TL-TCH-MAC-1 (Macuilxochitl) | 4-8-133, 153 | 5,149 | ? | — |
| Tlacolula | TL-TCH-TCH-50 (Tlacochahuaya) | 4-8-163 | 4,925 | 541 | 115.5 |
| Tlacolula | TL-TEO-TEO-29 (C. Paguia) | 4-8-104 | 716 | 73 | 157.8 |
| Tlacolula | TL-TEO-TEO-5 | 4-8-274, 276 | 123 | 7 | 169.7 |
| Tlacolula | TL-TEO-TEO-7 | 4-8-290 | 150 | ? | — |
| Tlacolula | TL-TEO-TEO-9 | 4-8-269 | 82 | ? | — |
| Tlacolula | TL-TL-SMT-2 | 4-8-247 | 122 | ? | — |
| Tlacolula | TL-TL-TL-73 | 4-8-323 | 1,389 | ? | — |
| Valle Grande | ZI-SAT-AB-10 | 3-8-213 | 25 | 3 | — |
| Valle Grande | ZI-SAT-SAT-5 | 3-8-250 | 825 | 92 | 222.9 |
| Valle Grande | ZI-SBM-SCM-21, 22 (Mixtepec) | 3-8-177 | 3,219 | 390 | 182.6 |
| Valle Grande | ZI-SCM-SCM-6 | 3-8-193 | 32 | 3 | — |
| Valle Grande | ZI-SCM-SCM-8 | 3-8-184 | I8 | ? | — |
| Valle Grande | ZI-SCM-TR-1 (El Trapiche) | 3-8-220 | 1,178 | 141 | 147.5 |
| Valle Grande | ZI-SCM-TR-4 | 3-8-222 | 120 | 13 | 569.4 |
| Valle Grande | ZI-SCQ-LS-1 (La Soledad) | 3-8-92 | 814 | ? | — |
| Valle Grande | ZI-SMA-SJL-1 | 3-8-271 | 225 | 29 | 85.7 |
| Valle Grande | ZI-SMA-SMA-32 | 3-8-285 | 503 | 54 | 262.8 |
| Valle Grande | ZI-SMA-SMA-5, 41 (El Choco) | 3-8-272, 274 | 1,320 | 159 | 204.9 |
| Valle Grande | ZI-SMA-SMA-8 | 3-8-266 | 25 | ? | — |
| Valle Grande | ZI-SPH-SPH-18 | 3-8-153 | 76 | 9 | — |

* Data summarized from Oaxaca survey publications (Blanton et al., 1982, app. X; Kowalewski et al., 1989, app. VII; Feinman & Nicholas, 2004a, apps. 4.A, 5.A, and 6.A).

overlook the pass that exits the east side of the valley and then descends to the drainage of the Tehuantepec River and its tributaries. Also on the west side of the valley, the terrace sites are part of the string of terrace sites in western Valle Grande. There also is one on a ridgetop at the southern edge of Ejutla, overlooking the Miahuatlán Valley to the south. So as one moves south from Tlacolula and Ocotlán into Ejutla, terrace sites tend to become more defendable (lookouts and garrisons) and less residential and civic-ceremonial.

Similar to terrace sites in Tlacolula and Ocotlán, a majority of terrace sites in Ejutla had some evidence of specialized production that can be attributed to Monte Albán IIIA (see Table 7.5 [column with items]). All but one of these sites also was defensibly located. We recovered the greatest quantity of production activities at EJ-CA-CA-13, where over half the terraces had special "items" that might reflect specialized activities. This terrace site is very defensibly located and likely also figured in defense. There is little good flat farmland nearby, and the site's residents may have focused on producing a range of nonsubsistence goods for exchange.

Terraces occupied in the Valley of Oaxaca during IIIA tend to be almost twice as large (average 205 $m^2$) as those in the Ejutla region (116 $m^2$). The size of individual terraces at IIIA sites in Oaxaca also is more variable, ranging from an average

area of less than 40 $m^2$ at TL-MAT-MAT-80 in Tlacolula to over 700 $m^2$ at Jalieza in Ocotlán (Table 7.6). In Ejutla, average terrace area per site ranges from 60 to 208 $m^2$. This variability in terrace size is not tied to the size of the settlement (Kowalewski et al., 1989, p. 242). For example, two of the largest IIIA terrace sites are Jalieza and El Palmillo, yet average terrace size is much greater at Jalieza than El Palmillo (44 $m^2$). So, overall, IIIA terrace sites in Ejutla have fewer and smaller terraces, and all but one terrace site in Ejutla was defensibly located. The IIIA terrace sites in Ejutla, collectively, appear to have played an important role in defense, possibly greater than their counterparts in the Valley of Oaxaca.

The distribution of projectile points across the combined Oaxaca/Ejutla region supports this finding of a greater defensive nature to Ejutla settlement than for Oaxaca as a whole. We recorded 57 projectile points in Ejutla compared to 78 in Oaxaca (123 if Monte Albán is included). Per 100 $km^2$, there were twice as many points in Ejutla as in Oaxaca and four times as many based on the number of site components (these distributions cannot be explained by subsistence differences between the two valleys). For IIIA, there is a definite association between projectile points and defendable site location. Approximately 20% of all IIIA sites in Ejutla, including the terrace sites, are defensibly located. Of the 30 points that were found in association with IIIA ceramics, half of the obsidian points and 75% of points made on other chipped stone materials (mostly chert) were found in defendable sites. This greater focus on defense in Ejutla likely reflects both the effort of the Monte Albán polity to monitor its southern border and intermittent tensions between the populations of Ejutla and Oaxaca as Monte Albán tried to strengthen its political influence and integrate Ejutla more fully.

## Public Architecture

Monte Albán IIIA ceramics were observed on at least one mounded structure at 30 sites in the Ejutla Valley (Table 7.7). Total mound volume was 188,995 $m^3$, higher than for any other phase in Ejutla. Fifteen of these sites have two or more mounds at least 1 m tall and are described in more detail below. This substantial increase in the amount of monumental architecture in the region reflects a major expansion in civic-ceremonial activity and increasing political complexity in the Ejutla Valley.

In contrast to Monte Albán II, when the three largest sites were built on earlier, large Late I occupations, many of the Monte Albán IIIA sites with monumental architecture were established in areas with little or no earlier occupation. Of the 15 sites in the mound hierarchy, nine were new occupations, although one of those sites had a large population in Late I that was abandoned during the intervening phase. Two of the sites had very small Monte Albán II occupations. Only four were sites with large Monte Albán II occupations. Yet there is some continuity with Monte Albán II in that the largest sites in that phase continued to be important in IIIA (four of the six largest Monte Albán II sites remained large in IIIA).

Fully half of all Ejutla mounds associated with IIIA ceramics are single component, including all or most of the mounds over 1 m tall at San Joaquín (IIIA-24), OC-SJP-SJP-129 (IIIA-37), and EJ-LC-LL-2 (IIIA-115). Over half the plazas with IIIA ceramics (14) also are single component, 10 of which are enclosed by three or four mounds, indicating some degree of limited access. This proportion (10 of 14) is greater than for the full plaza data set, suggesting a greater emphasis on formal architectural groupings in newly established IIIA sites than in those that existed previously. In addition, many other mounds are at sites that reached their greatest extents in IIIA, so we are reasonably sure that the mapped features were used in IIIA, even if they were not all initially constructed at that time.

The establishment of the new center at San Joaquín (IIIA-24; Appendix IX, Fig. 20) on a series of low hills in north-central Ejutla, north of the earlier large Monte Albán II centers, is responsible for much of the increase in monumental architecture in the Ejutla region during IIIA. Based on the number of mounds, this site was equivalent to the six Rank II mound centers in Oaxaca (Table 7.8). Most of the 44 mounds at San Joaquín are arranged in three groups on the top of three low hilltops that are connected to each other by low-density sherd scatters. The largest, western group, with 20 mounds and five plazas, was occupied only in Monte Albán IIIA (Figs. 7.17 and 7.18). The mounds in this group form three small clusters, each with at least one plaza, that are dispersed along the top of the largest hill (Appendix IX, Fig. 20b). The largest cluster includes a small ballcourt adjacent to a platform on which there are four structures. Most of the plazas in these three architectural clusters are enclosed by three or four mounds, so access to them was restricted at least to a degree. The architecture of the other two mound groups, to the east, is even more compact (Appendix IX, Fig. 20c). The northern group consists of 12 mounds, eight of which are arranged around three plazas (Fig. 7.19); the central plaza is the most closed at the site. The southern group includes a small complex of five mounds associated with two plazas (Fig. 7.20; more detailed descriptions of the site are included in Appendix VIII).

The next largest mound sites in Ejutla have between nine and 11 mounds at least 1 m tall, corresponding to Rank III mound centers in Oaxaca. These four sites also have formal mound groupings, including one or more plazas with limited access. Although the size of these sites varies considerably, all have populations of at least 100. Two of the settlements, the Ejutla site (IIIA-74; Appendix IX, Fig. 6; see also Figs. 6.5–6.9) and Amatengo (IIIA-130; Appendix IX, Fig. 33; see also Fig. 5.17), were important Monte Albán II mound centers, although some additional construction may have continued in IIIA (see prior discussions in Chapters 5 and 6). The other two, OC-SJP-SJP-129 (IIIA-37) and EJ-LC-LL-2 (IIIA-115), were new occupations. Both were established at the edge of the Ejutla region yet differed in significant ways.

Although there are several terraces at OC-SJP-SJP-129 (Appendix IX, Fig. 47), the site is more notable for its architecture. The site comprises several small clusters of mounds located on top of a very high, steep mountain ridge in northeastern Ejutla (now part of the modern Ocotlán district). A four-mound group that encloses a plaza with very limited access is located at the highest point of the site. Access to this four-mound group and the enclosed plaza was the most difficult of any site in the Ejutla survey region. Most of the terraces we mapped at the site are on the steep slopes just below. The other two clusters of mounds are on a saddle to the east. The site clearly had defensive or military functions. In contrast, EJ-LC-LL-2 (IIIA-115; Appendix IX, Fig. 31) is located on a low hill

TABLE 7.7. Monte Albán IIIA sites in the Ejutla Valley survey region with populations over 50, mounds, terraces, defensive walls, and/or ceramic collections.

| Site | Name | Grid square | Population | Mounds <1 m | Mounds ≥1 m | Volume ($m^3$) | Terraces | Defensive walls | Ceramic types | Obsidian |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | OC-OC-BV-11 | N3E5 | 8 | 0 | 1 | 270 | 0 | 0 | — | 1 |
| 8 | EJ-EJ-LOG-5 | N1E5 | 55 | 1 | 0 | 0 | 0 | 5 | — | 0 |
| 9 | EJ-EJ-SMC-6 (M. de las Azucenas) | N2E6 | 241 | 10 | 6 | 957 | 19 | 0 | 10 | 2 |
| 11 | EJ-EJ-SMC-7 (Chichihualtepec) | N1E5 | 15 | 0 | 2 | 2,915 | 0 | 0 | 11 | 10 |
| 13 | EJ-EJ-EV-13 | N1E6 | 8 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 14 | EJ-EJ-EV-2 | N1E7 | 12 | 0 | 1 | 518 | 0 | 0 | 5 | 6 |
| 24 | EJ-EJ-SJ-6/LP-LG-1 (S. Joaquín) | S1E6 | 6,710 | 10 | 34 | 37,251 | 1 | 0 | 15 | 137 |
| 25 | EJ-EJ-SMC-1 | N1E6 | 17 | 0 | 0 | 0 | 0 | 0 | 14 | 12 |
| 31 | EJ-EJ-SJ-2 | S1E6 | 320 | 3 | 7 | 14,713 | 6 | 0 | 11 | 31 |
| 34 | OC-SJP-SJP-108 | N2E8 | 502 | 11 | 1 | 1,139 | 64 | 0 | 11 | 1 |
| 35 | OC-SJP-SJP-109 | N2E8 | 8 | 0 | 2 | 383 | 0 | 0 | — | 0 |
| 36 | OC-SJP-SJP-110 | N1E8 | 8 | 0 | 1 | 88 | 0 | 1 | 1 | 0 |
| 37 | OC-SJP-SJP-129 | N1E9 | 184 | 3 | 11 | 4,429 | 8 | 5 | — | 36 |
| 43 | EJ-EJ-LO-8 | S1E8 | 102 | 0 | 0 | 0 | 4 | 0 | — | 1 |
| 44 | EJ-EJ-LO-4 | S1E8 | 33 | 0 | 0 | 0 | 0 | 0 | 6 | 1 |
| 51 | EJ-EJ-SJ-20 | S2E6 | 13 | 0 | 0 | 0 | 0 | 0 | 10 | 2 |
| 53 | EJ-EJ-EJ-2 | S2E7 | 33 | 1 | 0 | 174 | 0 | 0 | — | 1 |
| 54 | EJ-EJ-LO-11 | S2E7 | 48 | 0 | 1 | 94 | 0 | 1 | — | 2 |
| 55 | EJ-EJ-EC-1 | S2E8 | 27 | 0 | 0 | 0 | 0 | 0 | 6 | 1 |
| 57 | EJ-TAN-TAN-2 | S2E6 | 148 | 0 | 2 | 5,701 | 0 | 0 | 4 | 14 |
| 58 | EJ-TAN-TAN-3 | S2E6 | 54 | 0 | 0 | 0 | 0 | 0 | — | 0 |
| 60 | EJ-EJ-EJ-17 | S3E6 | 77 | 0 | 0 | 0 | 0 | 0 | — | 2 |
| 65 | EJ-TAN-TAN-1 (Taniche) | S2E6 | 1,016 | 0 | 0 | 0 | 0 | 0 | 8 | 7 |
| 74 | EJ-EJ-EJ-1 (Ejutla) | S2E7 | 1,850 | 0 | 10 | 70,000 | 0 | 0 | 19 | 156 |
| 78 | EJ-EJ-EJ-3 | S2E7 | 8 | 0 | 1 | 106 | 0 | 0 | 5 | 3 |
| 85 | EJ-EJ-EJ-21 | S3E7 | 102 | 0 | 0 | 0 | 0 | 0 | — | 2 |
| 91 | EJ-CA-CA-1 (Coatecas) | S2E9 | 30 | 1 | 0 | 85 | 3 | 0 | 4 | 1 |
| 95 | EJ-EJ-SCN-1 | S1E3 | 9 | 1 | 1 | 283 | 0 | 0 | — | 1 |
| 96 | EJ-SML-SML-11 | S1E4 | 8 | 0 | 1 | 71 | 0 | 0 | — | 0 |
| 98 | EJ-SAZ-SAZ-4 | S1E3 | 68 | 0 | 0 | 0 | 8 | 0 | 3 | 0 |
| 104 | EJ-SML-SML-1 | S1E4 | 33 | 0 | 1 | 286 | 0 | 0 | — | 0 |
| 106 | EJ-SML-SML-18 | S1E4 | 46 | 0 | 2 | 258 | 0 | 0 | 3 | 2 |
| 107 | EJ-SAZ-SAZ-9 | S2E3 | 78 | 0 | 4 | 1,526 | 0 | 0 | 9 | 1 |
| 108 | EJ-EJ-SCN-19 | N1E4 | 18 | 0 | 0 | 0 | 0 | 0 | 7 | 6 |
| 109 | EJ-SML-SML-16 | S2E4 | 497 | 0 | 3 | 463 | 59 | 6 | 5 | 1 |
| 112 | EJ-LC-AB-1 | S2E5 | 97 | 1 | 2 | 504 | 0 | 0 | 5 | 5 |
| 114 | EJ-LC-LL-1 | S3E5 | 8 | 0 | 0 | 0 | 0 | 0 | 5 | 2 |
| 115 | EJ-LC-LL-2 | S3E5 | 254 | 1 | 11 | 5,563 | 0 | 1 | 5 | 16 |
| 116 | EJ-TAN-TAN-2 | S3E6 | 24 | 0 | 0 | 0 | 0 | 0 | 6 | 58 |
| 117 | EJ-TAN-TAN-2 | S3E5 | 8 | 0 | 1 | 501 | 0 | 0 | 5 | 2 |
| 118 | EJ-TAN-TAN-2 | S3E5 | 27 | 0 | 0 | 0 | 0 | 0 | 8 | 1 |
| 119 | EJ-LC-RE-3 | S3E5 | 13 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 120 | EJ-EJ-HV-2 | S3E6 | 107 | 0 | 0 | 0 | 0 | 0 | — | 4 |
| 124 | EJ-EJ-EJ-42 | S3E7 | 96 | 0 | 1 | 15,155 | 0 | 0 | 16 | 6 |
| 127 | EJ-CA-CA-8 | S4E9 | 8 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 129 | EJ-SAA-SAA-6 | S4E5 | 8 | 0 | 0 | 0 | 0 | 0 | 10 | 6 |
| 130 | EJ-SAA-SAA-15 (Amatengo) | S4E5 | 253 | 1 | 9 | 17,105 | 0 | 0 | 11 | 51 |
| 131 | EJ-YO-YO-5 | S6E5 | 8 | 0 | 0 | 0 | 0 | 0 | 5 | 0 |
| 132 | EJ-YO-YO-12 (Yogana) | S6E6 | 332 | 3 | 7 | 8,185 | 1 | 1 | 16 | 40 |
| 134 | EJ-CA-CA-18 | S4E8 | 9 | 1 | 1 | 272 | 0 | 0 | 3 | 0 |
| 135 | EJ-CA-CA-13 | S4E9 | 255 | 0 | 0 | 0 | 28 | 2 | 9 | 61 |

TABLE 7.8. Monte Albán IIIA mound hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| Level | Mounds | No. of sites | Mounds | No. of sites |
| I | ? | 1 | — | — |
| II | 24–28 | 6 | 34 | 1 |
| III | 8–16 | 18 | 9–11 | 4 |
| IV | 5–7 | 11 | 6–7 | 3 |
| V | 2–4 | 60 | 2–4 | 7 |
| No rank | 0–1 | 833 | 0–1 | 100 |

just west of the Atoyac River in southwestern Ejutla. Five of the mounds at the site and a long, low wall that connects two of the structures form an enclosed area with very limited access. At the north end of the enclosed area is a plaza surrounded by three of the mounds. The other structures are more randomly placed just to the west. Although situated at the edge of the Ejutla Valley, this site had no clear defensive functions. The nature of the architecture, however, suggests important civic-ceremonial functions, possibly with boundary relations.

Three sites have six or seven mounds over 1 m tall and are Rank IV mound centers. Unlike the sites with more mounds, these sites have comparable populations (between 240 and 330). Yogana (IIIA-132; Appendix IX, Fig. 43; see also Fig. 5.16) was slightly larger in Late I than in IIIA; however, all the

FIG. 7.17. Western mound group at San Joaquín (EJ-EJ-SJ-6).

mounds also were occupied in IIIA. This site, with one four-mound group enclosing a plaza with very limited access, was discussed in Chapter 5. The site also includes a large, very open platform that appears to have had a very different role than the enclosed plaza. The architecture at the other two sites was less formal and more dispersed than at the larger sites. EJ-EJ-SJ-2 (IIIA-31; Fig. 7.21 and Appendix IX, Fig. 19), initially established in Monte Albán IIIA, consists of a platform on which three smaller mounds were constructed. These structures partially enclosed three small plazas. Other small mounds at the site were dispersed among several terraces. As we discuss below, we recorded evidence of specialized nonagricultural production at this site. There were no formal architectural groupings at the other site, EJ-EJ-SMC-6 (IIIA-9; Appendix IX, Fig. 22), discussed above with terrace sites. Several small mounds were dispersed among the terraces, with numerous low house foundations below the terraced slope. The site clearly had defensive functions.

The remaining sites have fewer than four mounds at least 1 m tall. Populations at these sites range from eight people to 500, and it is unlikely that all were civic-ceremonial centers, even low-level ones. ÒC-SJP-SJP-109 (IIIA-35; Appendix IX, Fig. 45) and EJ-LC-AB-1 (IIIA-112; Appendix IX, Fig. 24) consisted of only two or three mounds with no clearly discernible plazas. Two mounds connected by a small raised plaza continued to be occupied at Chichihualtepec (IIIA-11;

FIG. 7.19. Northern mound group at San Joaquín.

Appendix IX, Fig. 23; see also Fig. 4.8); however, the population, never large at this site, was smaller than it had been in Late I or II. This long-occupied site was discussed in Chapter 4. With the establishment of the new center at San Joaquín, only 4 km away, the residents of this site may have lost some of their earlier prestige (see diseussion below on ceramic distributions). EJ-SML-SML-16 (IIIA-109), with three low connected platforms, was discussed above with terrace sites.

Two sites with possible IIIA architecture are problematic. We mapped two large mounds around a possible plaza at EJ-TAN-TAN-2 (IIIA-57; Appendix IX, Fig. 41). There may have been three additional mounds nearby, but heavy plowing has greatly impacted the site. With only two mounds, the site would fit at the bottom of the mound hierarchy; however, the two structures we were able to map are very large (by Ejutla standards), showing significant labor investment. Although not large, the site does have over 100 people. The other site, EJ-EJ-EJ-42 (IIIA-124), was discussed in Chapter 5. It consists of one very large platform on which we observed ceramics from Late I through V, so we cannot be sure of its monumentality in any one phase.

Another small mound site, EJ-SAZ-SAZ-9 (IIIA-107), was a reoccupation of a large Late I site (Appendix IX, Fig. 35) with a small formal group of three mounds around a small plaza adjacent to a possible ballcourt. This is the second possible ballcourt in Ejutla at a Monte Albán IIIA center. In each case, the ballcourt consists of two closely spaced linear mounds and lacks end mounds. Later ballcourts in Ejutla are

FIG. 7.18. Largest mound in western group at San Joaquín.

FIG. 7.20. Southern mound group at San Joaquín.

FIG. 7.21. Large platform and mound complex on hilltop at EJ-EJ-SJ-2.

larger and more easily identified. At San Joaquín, the ballcourt is single-component IIIA; at EJ-SAZ-SAZ-9, it is not. Even if the ballcourt at the latter site was constructed during the smaller IIIA reoccupation of this large Late I site, the roles of the ballcourts may have been different—boundary control at EJ-SAZ-SAZ-9 versus civic-ceremonial at San Joaquín.

## Hierarchy

With the large population increase in the Valley of Oaxaca during Monte Albán IIIA, an additional level was added to the population hierarchy (Table 7.9). This new tier was not at the very top or the very bottom but consisted of a new level of secondary centers that were much larger than secondary centers had been in Monte Albán II. Even though Monte Albán was still the largest site and had far more monumental architecture than any other site, it was no longer the only Rank I population center in the valley, which now included Jalieza in the southern part of the valley. A cluster of three large Rank II and III sites (Dainzú/Macuilxochitl/Tlacochahuaya) that collectively was as large as Jalieza also may have functioned as the Rank I site in Tlacolula. The expansion of Rank I centers and the addition of a new level of secondary centers suggests that greater integration was achieved across the Valley of Oaxaca as the political system was less centralized at Monte Albán and the new secondary centers took on expanded political functions (Blanton et al., 1982, p. 93; Kowalewski et al., 1989, p. 229).

Great expansion of the site/population hierarchy also occurred in Ejutla during the transition from Monte Albán II to IIIA (Fig. 7.22). The new IIIA center at San Joaquín (IIIA-24) was much larger than any prior or contemporary center in the Ejutla Valley. It also was the largest Rank II center in the combined Oaxaca/Ejutla region, dwarfing the Ejutla site (IIIA-74; equivalent to a Rank III site in Oaxaca) and a new nearby settlement at Taniche (IIIA-65), the only Rank IV settlement in Ejutla. Neither of the Monte Albán II secondary centers located in southern Ejutla—Yogana (IIIA-132) and Amatengo (IIIA-130)—grew during the transition, and both dropped to Rank V. The lowest three population tiers in Ejutla, which include all the terrace sites, correspond to

TABLE 7.9. Monte Albán IIIA population hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| Level | Population | No. of sites | Population | No. of sites |
| I | 12,835–16,507 | 2 | — | — |
| II | 4,925–6,195 | 3 | 6,170 | 1 |
| III | 1,789–3,219 | 9 | 1,850 | 1 |
| IV | 715–1,575 | 20 | 1,016 | 1 |
| V | 211–608 | 35 | 241–502 | 8 |
| VI | 116–197 | 40 | 96–184 | 7 |
| No rank | 8–100 | 820 | 8–78 | 97 |

* Two Level II centers in Oaxaca are part of combined Dainzú/Macuilxochitl/Tlacochahuaya.

the three lowest levels in Oaxaca. With so few midlevel centers in Ejutla, civic-ceremonial activities likely were heavily concentrated in San Joaquín.

The distribution of Rank I and II population centers across the Valleys of Oaxaca and Ejutla also indicate greater integration. These centers form a lattice of fairly evenly spaced centers across the region, each between 16 and 24 km from the nearest other large center (Fig. 7.3). There also is one large center in each major valley subarea—Monte Albán in Central, Dainzú/Macuilxochitl/Tlacochahuaya in western Tlacolula, El Palmillo in eastern Tlacolula, Jalieza in the southern arm of the valley, and San Joaquín in Ejutla. The establishment and growth of San Joaquín as a part of this lattice of large centers suggests that Ejutla participated in the larger integrated network that centered on Monte Albán in IIIA.

The mound hierarchy in Ejutla also was much more developed in IIIA than in any prior phase, with four levels above the smallest, nonmound sites (Table 7.8). The number of levels in the mound hierarchy in the Valley of Oaxaca remained the same as it had been in Monte Albán II, with five levels of mound centers; the largest change was expansion in the number of sites with mounds, especially in the lowest, Rank V centers. In general, the amount of formal architecture decreases with each level in the mound hierarchy.

During IIIA, the number of mounds at Rank II centers in Oaxaca was less variable than earlier in Monte Albán II. At the same time, the gap between Rank II and Rank III centers was greater than ever before. These two changes may reflect greater uniformity in civic-ceremonial activities at the Rank II centers as Monte Albán decentralized and those centers took on more political functions. This gulf was even larger for Ejutla, which would indicate an expansion of civic-ceremonial activities at San Joaquín relative to the smaller centers. Not only did San Joaquín have three times the architecture of any other site in Ejutla, but it had more mounds than any other Rank II center in the combined Oaxaca/Ejutla region, surpassing even Jalieza, which had twice the population. As the highest-ranking center in the Valley of Oaxaca's southern periphery, political power and civic-ceremonial activities may have been especially centralized in San Joaquín.

There was a marked change in the distribution of mound centers between Monte Albán II and IIIA, with a shift away from Etla to the Valle Grande (Fig. 7.7). Rank II centers were heavily concentrated in the Valle Grande, whereas Rank III centers were located more evenly in all valley arms, including Ejutla. With more mound centers at all levels, civic-ceremonial activities were less centralized in the Valle Grande, and that

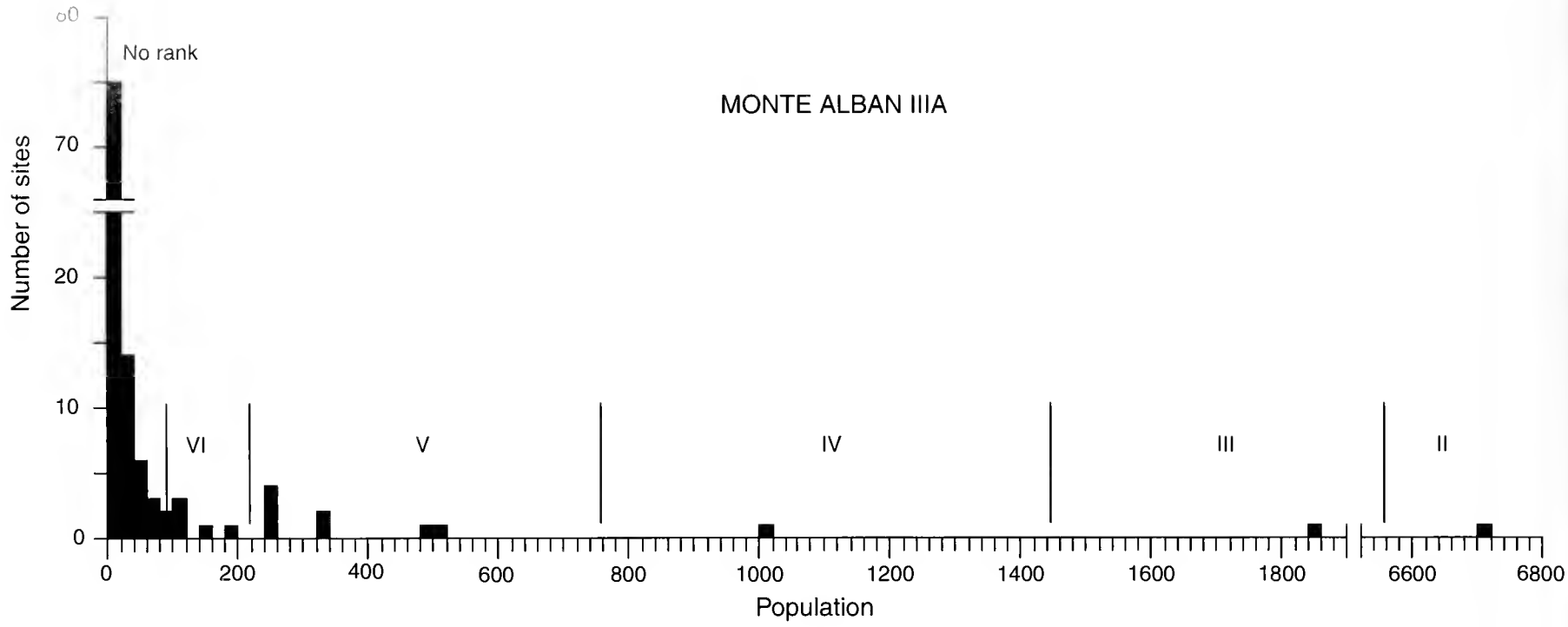



FIG. 7.22. Monte Albán IIIA population histogram for Ejutla.

part of the valley was more tightly integrated than other parts of the valley were. Both Tlacolula and Ejutla had one Rank II and four Rank III mound centers. The major difference between those two areas was the presence of many more sites at the lower end of the mound hierarchy (sites with two to seven mounds) in Tlacolula (23) than in Ejutla (10). As the population hierarchy for Ejutla and the mound hierarchies for both Ejutla and Tlacolula indicate, the nature of organization in those two areas may have been quite different from that of the Valle Grande, with greater centralization of civic-ceremonial activities in fewer centers, as might be expected in more peripheral as opposed to closer-to-the-core areas. Although Tlacolula was less of a periphery than Ejutla, it still was less tightly incorporated/integrated into the core Monte Albán polity than was the Valle Grande. These distinctions between greater integration and greater centralization may reflect the different ways in which leaders are financed, whether through heavier reliance on local agricultural production or longer-distance networks focused on nonstaples (Blanton & Fargher, 2008). The economic relations between different valley sectors and the ruling authorities at Monte Albán varied, with the Valle Grande providing more regular and greater quantities of agricultural surplus (Nicholas, 1989, p. 498) to the center than did the other two subregions.

In Ejutla, there is not complete overlap or agreement between the two measures of hierarchy (Fig. 7.8), yet both show a major change in the distribution of centers between Monte Albán II and IIIA. During the earlier phase, the largest population and mound centers in Ejutla were located in the southern part of the region. The focus shifted to the north in Monte Albán IIIA, with the central core of settlement centered on San Joaquín and the Ejutla site, which were by far the two most monumentally complex sites. About 75% of the population resided in this core, which was circled by an outer ring of smaller centers that included several low-level mound centers. The concentration of civic-ceremonial activities in just a few large centers may reflect that Monte Albán's relations with Ejutla were carried out principally at those centers, focused on powerful individuals. These relations may have been more in the realm of external trade routes, offense and defense, and access to exotic and precious goods. The growth of a single large center in a location closer to Monte Albán may reflect both tighter ties between the two valleys (Oaxaca and Ejutla) than existed in earlier times and the nodal role of San Joaquín in socioeconomic networks that likely extended farther to the south and southwest. The Ejutla site, though diminished in relative importance, continued to be well positioncd as nodal link to areas farther south, southeast, and on the Oaxaca coast (White & Barber, 2012).

## Ceramics

Monte Albán IIIA ceramics in the Valley of Oaxaca were dominated by undecorated gray vessels that are rarely found elsewhere in the highlands (Bernal, 1965). With less ceramic diversity overall, pottery distributions in the Valley of Oaxaca were more homogeneous during Monte Albán IIIA than at any other time (Kowalewski et al., 1989, p. 214). These same statements apply to Ejutla, where the most common Valley of Oaxaca IIIA types are found throughout the region, another indication that Ejutla was completely incorporated into exchange and cultural networks centered on the Valley of Oaxaca.

In a comparison of highly decorated bowls to undecorated bowls in the ceramic assemblages for the three phases for which we have the largest samples, Late I, IIIA, and V, the ratio was always lower for Ejutla compared to Oaxaca. As a periphery of the larger Valley of Oaxaca political system, this pattern was not unexpected (Feinman, 1989). Yet the difference between Ejutla and Oaxaca was much less during Monte Albán IIIA than the other two phases (Fig. 7.23). The proportions of gris and café wares in the ceramic assemblages of Ejutla and Oaxaca for Monte Albán IIIA and V reveal a similar pattern. In general, gris paste vessels are harder and more likely to receive some exterior decoration or finish than the softer, more friable café vessels (Feinman, 1989; see also Feinman et al., 1981). As with the undecorated gris bowls, Ejutla also had higher proportions of café pottery; the difference between Ejutla and Oaxaca, however, was negligible in Monte Albán IIIA compared to the later phase (Monte Albán V; Fig. 7.24). These two measures together reveal greater integration between Ejutla and Oaxaca in IIIA than during prior (and later) phases.

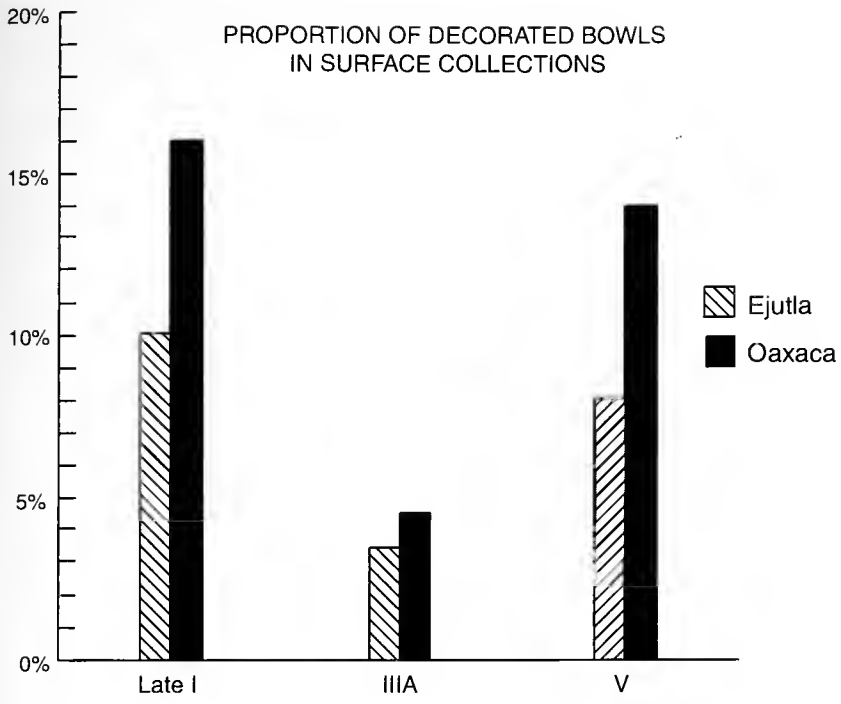



FIG. 7.23. Proportion of decorated bowls in surface collections in Oaxaca and Ejutla.

## Ceramic Distributions

Detailed analysis of ceramic distributions across the region provides additional support for greater integration across the Central Valleys of Oaxaca during Monte Albán IIIA. As in the Valley of Oaxaca (Kowalewski et al., 1989, figs. 8.3 and 8.4), two utilitarian gris forms, G-35 bowls (T1126) and G-1 jars (T1120), are widespread and abundant in Ejutla (Figs. 7.25 and 7.26), together forming half of the gris ware assemblage. G-23 bowls (T1264) are the most common highly decorated gris vessels in Oaxaca; they occur in especially high numbers at Monte Albán and Jalieza but also are abundant in Tlacolula and the Valle Grande (Kowalewski et al., 1989, p. 214). This variety also was relatively common in Ejutla, where its distribution is widespread (Fig. 2.27). In general, this ware was more frequent at the larger sites, especially San Joaquín (in grid square S1E6) and many of the smaller centers that ring the Ejutla Valley in IIIA. On survey, we found few G-23s

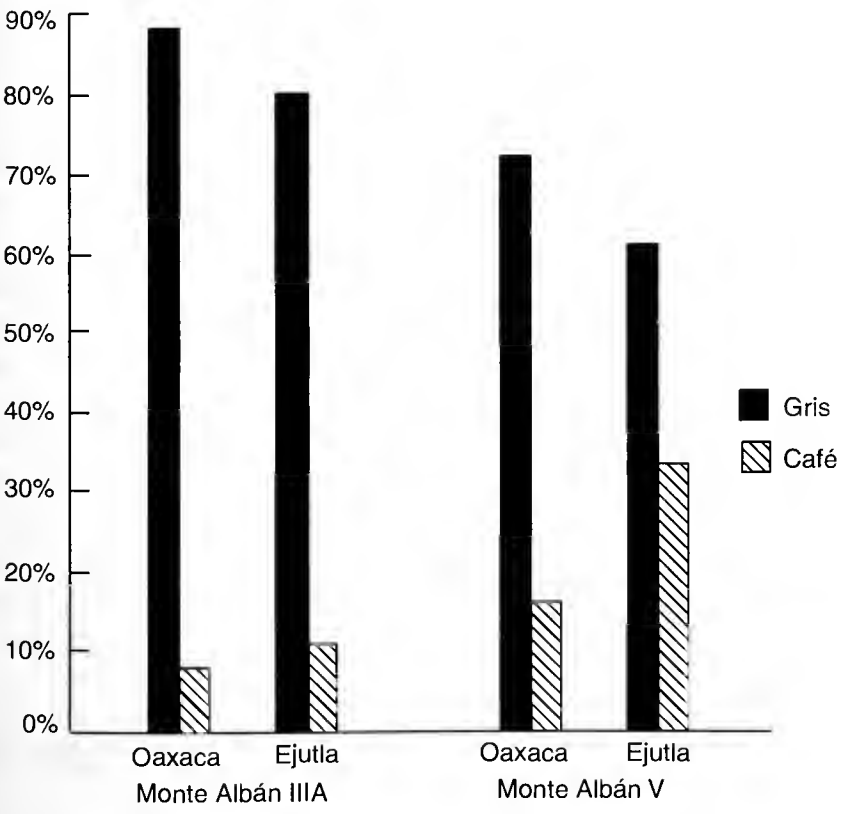



FIG. 7.24. Proportion of gris and café pottery in single-component surface collections in Oaxaca and Ejutla.

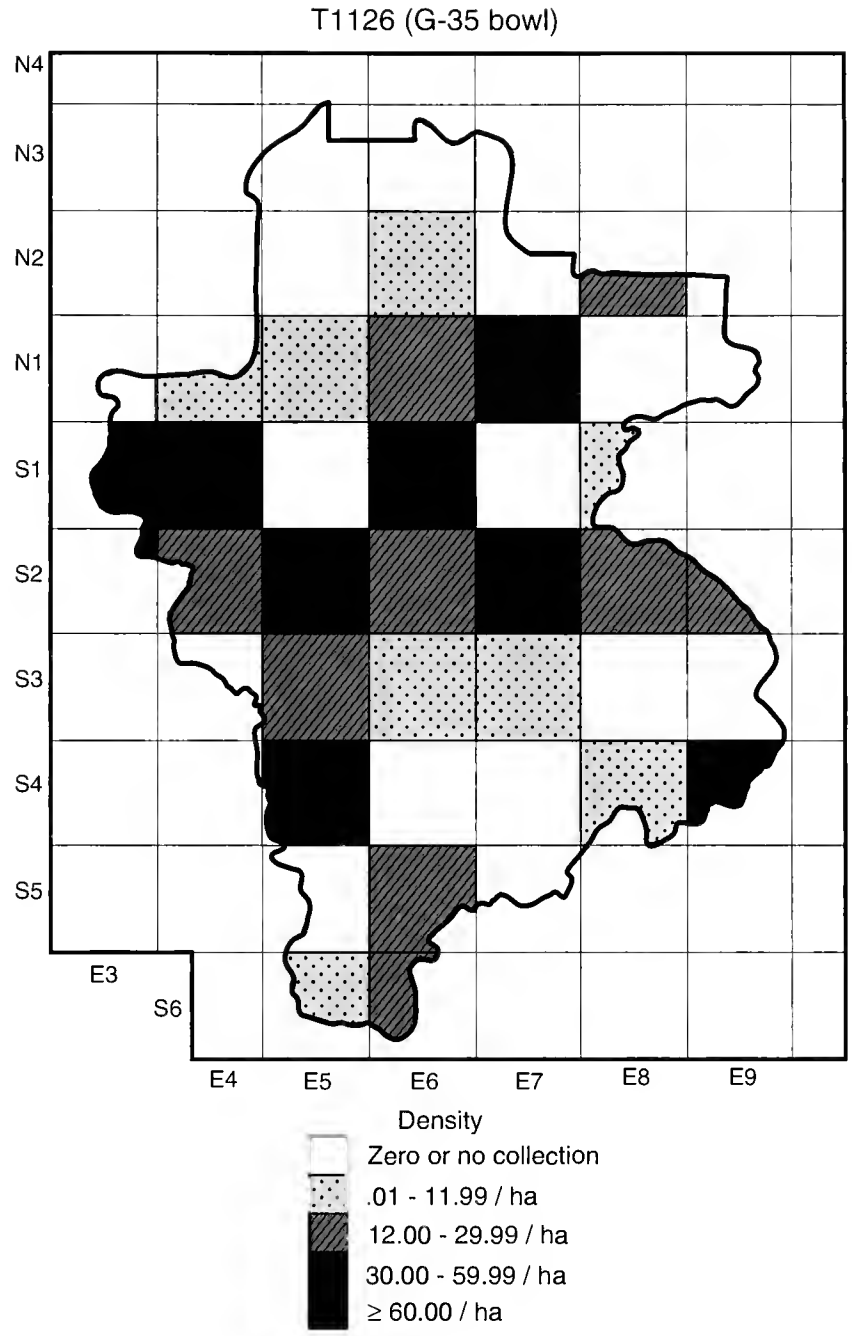



FIG. 7.25. Distribution of G-35 bowls (T1126) in Ejutla in Monte Albán IIIA.

at the Ejutla site (in grid square S2E7), most of which is under the modern town, making recovery of surface ceramics less than ideal, although we did record other Classic period pottery there. During subsequent excavation in one small sector of the site, we did find higher quantities (Feinman & Nicholas, 1994). Overall, many gris ceramic types that are most common in the Valle Grande also are abundant in Ejutla, and ceramic types that are less common in the Valle Grande are less common in Ejutla.

The distribution and abundance of café wares in Ejutla, especially T2013A curved-neck jars, also parallel the patterns in the Valle Grande. The T2013A jars are by far most abundant in the Valle Grande (Kowalewski et al., 1989, p. 214); they also are more common in Ejutla than in any of the other subareas of Oaxaca (94 occurrences in Ejutla compared to 38 or fewer in Tlacolula, Etla, or Central). Two other café vessels, raked *ollas* (T2009) and conical *cajetes* (T2086), that have spottier distributions but are most common in the Valle Grande (Kowawlewski et al., 1989, p. 214, app. VI) are present in low quantities in Ejutla.

There are few amarillo ceramics in Ejutla, yet the relative abundance of one variety, A-8 bowls (T3410, an amarillo version of G-23), is higher in Ejutla (10 per 1,000 collected sherds) than in all other subareas of Oaxaca (5.5 or fewer)

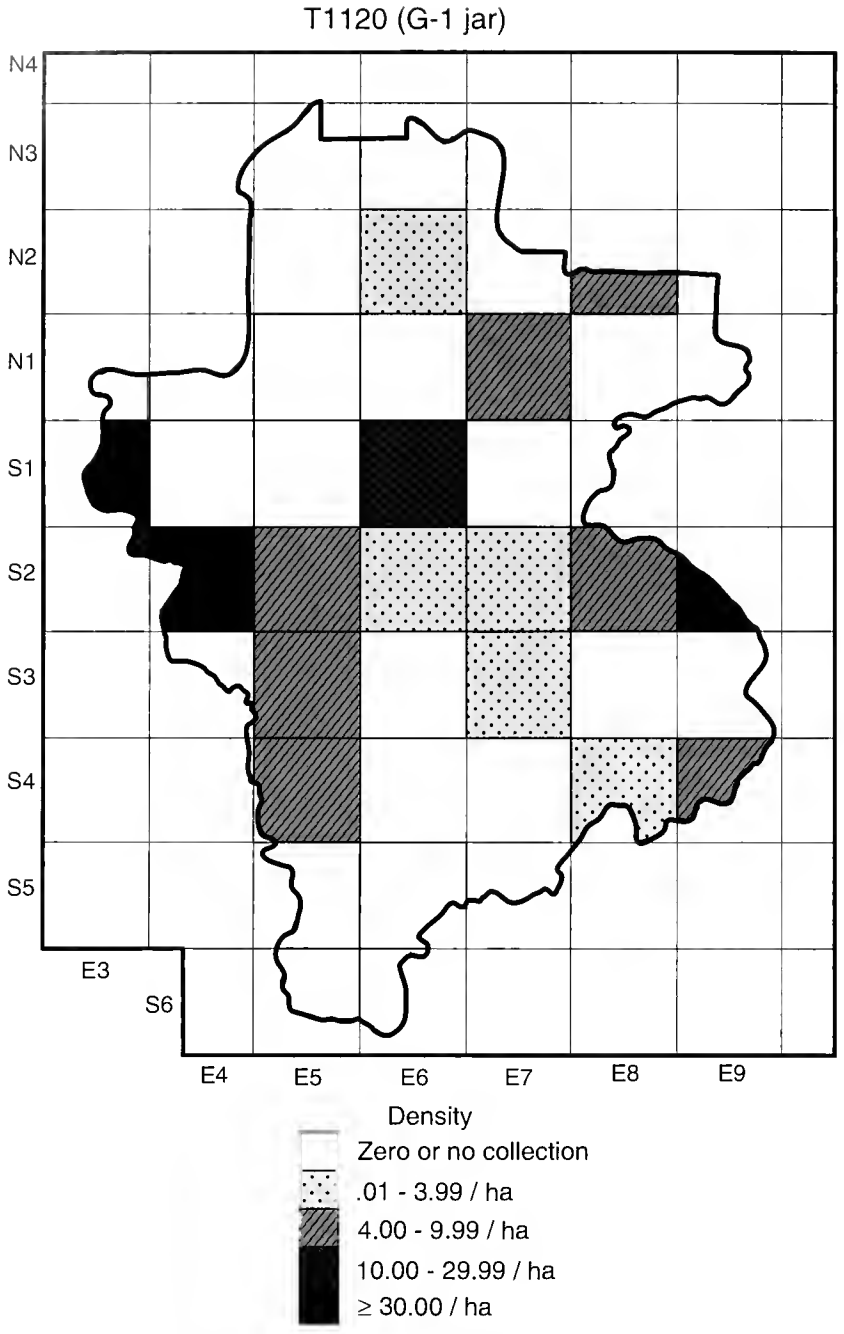



FIG. 7.26. Distribution of G-1 jars (T1120) in Ejutla in Monte Albán IIIA.

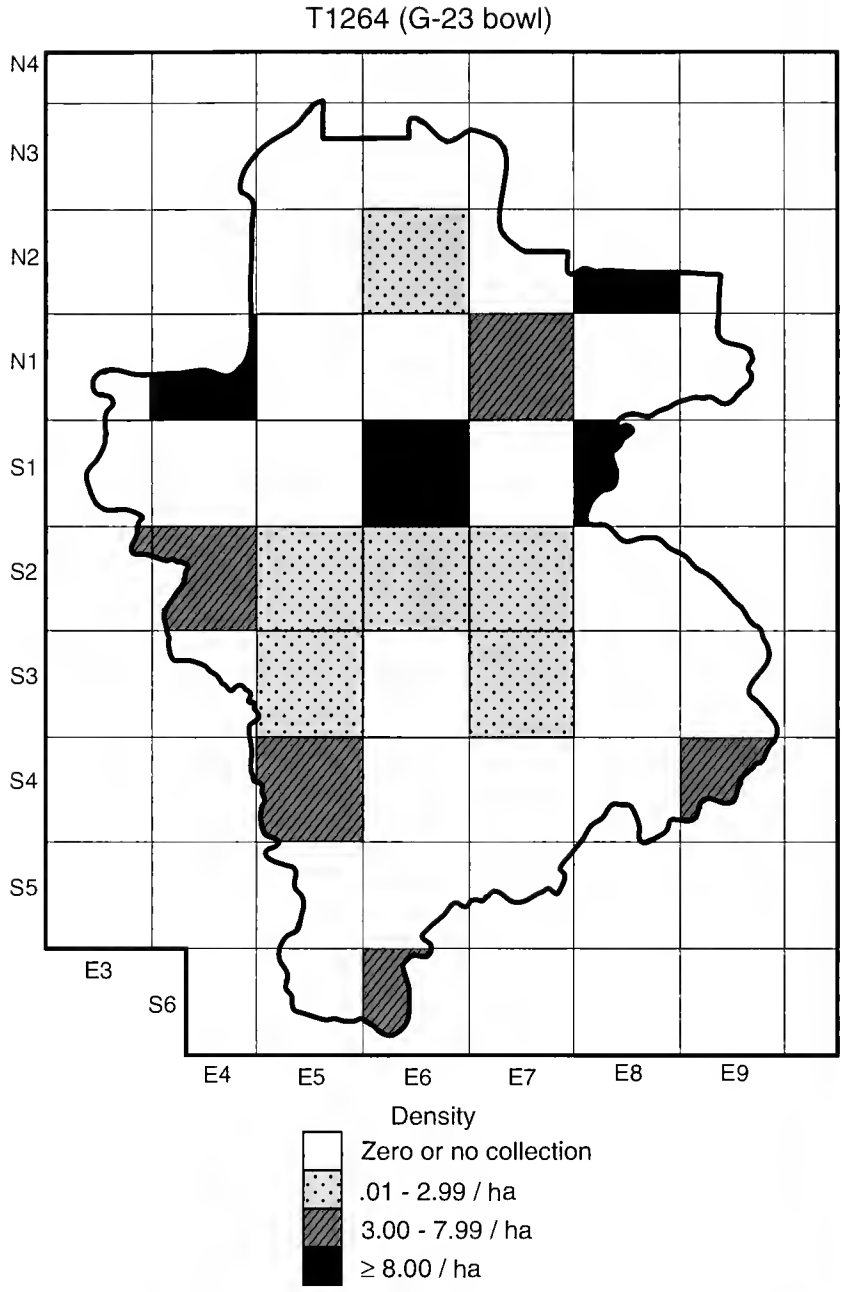



FIG. 7.27. Distribution of G-23 bowls (T1264) in Ejutla in Monte Albán IIIA.

except Central. The distribution of A-8 bowls is uneven in the Valley of Oaxaca (Kowalewski et al., 1989, fig. 8.9), although one area of abundance is in southern Ocotlán, just north of the boundary with Ejutla. Another amarillo vessel, Dainzú bowls (T3500), are most abundant in Tlacolula; they occur less frequently in the Valle Grande, although two sites in southern Ocotlán had high quantities (Kowalewski et al., 1989, fig.8.10, app. VI). These bowls are rare in Ejutla, yet half of the Dainzú bowls we did collect are from sites in northeastern Ejutla, adjacent to southern Ocotlán.

In sum, ceramic distributions in the Ejutla Valley are generally most similar to those in the southern part of the Valle Grande, especially southern Ocotlán. Whereas earlier connections between the two valleys appear to have largely followed the Atoyac River into western Ejutla, in Monte Albán IIIA there was a shift to the east. A new hilltop terraced site, at Magdalena Ocotlán in southern Ocotlán (Fig. 7.4), was closer to the Ejutla region than Tlapacoyan was and became an important small center with more direct access to Ejutla; it may have usurped some of Tlapacoyan's earlier roles in interchange with Ejutla. With this change, the elites at Chichihualtepec (IIIA-11) also may have lost their special connection, as more direct connections to the new center at San Joaquín were established through Ocotlán.

### Ceramic Types per Site

Changes in the numbers of ceramic types per site also indicate a shift in the nature of integration between Ejutla and Oaxaca. With the general decline through time in the number of ceramic types defined for each phase, the overall index for each valley also decreased in Monte Albán IIIA. For the Valley of Oaxaca, the average number of types per site dropped equally at sites with mounds and those without, yet residents of mound centers continued to have access to a wider range of goods, having 2.2 times as many ceramic types as settlements without mounds (Table 7.10). For Ejutla, the change was more pronounced. Types per site at settlements without mounds increased slightly (from 5.6 to 5.9), while the average number of types at mound centers in Ejutla was almost halved (from 17.6 to 10). As a result, the difference in ceramic diversity between mound centers and all other settlements was much reduced in Monte Albán IIIA from what it had been earlier Monte Albán II, when mound centers had three times as many ceramic types as other settlements. Still, ceramic diversity at sites with mounds in Ejutla was only slightly lower than for such sites in Oaxaca. At the same time, the average number of types per site at settlements without mounds was slightly higher in Ejutla than in the Valley of Oaxaca.

TABLE 7.10. Average number of ceramic types at Monte Albán IIIA sites in Ejutla and Valley of Oaxaca subareas.

| | Types per site | Sites with mounds | Sites without mounds |
|---|---|---|---|
| Ejutla Valley | 7.4 | 10.0 | 5.9 |
| Oaxaca Valley | 7.3 | 11.0 | 4.9 |
| Etla | 7.1 | 8.7 | 5.5 |
| Central | 6.7 | 13.7 | 4.6 |
| Central (without Monte Albán) | 5.6 | 9.6 | 4.6 |
| Valle Grande | 8.1 | 12.2 | 4.8 |
| Ocotlán | 9.2 | 11.4 | 7.0 |
| Ocotlán (without Jalieza) | 7.9 | 9.0 | 7.0 |
| Tlacolula | 6.2 | 9.0 | 4.9 |

That the average number of types per site in each subarea of the Valley of Oaxaca, including Ejutla, was less variable than in any prior phase is another indication of greater economic integration across the entire region. The highest types per site are in the southern part of the valley (Valle Grande, Ocotlán, and Ejutla), where growth was most rapid in IIIA (Table 7.10). The greatest differences between settlements with mounds and those without were in the Central subarea and Valle Grande, the areas that formed the core area of the Monte Albán polity. The inhabitants of smaller settlements in those areas continued to be more disadvantaged compared to their neighbors at larger, mound centers than were residents of smaller settlements in the other subareas. Sites with mounds in the other subareas of the Valley of Oaxaca have fewer ceramic types, while the settlements without mounds in the two southernmost areas, Ejutla and Ocotlán, have the most. These patterns indicate that strategies of integration varied across this large region. Resources flowing into and across the core area of the Monte Albán polity may have moved through more politically entwined networks of exchange (or tribute) that privileged important centers at the expense of smaller settlements; the privileging of centers occurred to a lesser degree in more peripheral areas like Ejutla. A case in point is San Joaquín. This large IIIA center in Ejutla is at the top of the mound and population hierarchies in Ejutla, much larger and more monumental than any other settlement, yet several other, smaller sites in Ejutla had greater ceramic diversity.

The mound and population hierarchies for Ejutla in Monte Albán IIIA overlap to some degree (Fig. 7.8), and settlements at the top of both hierarchies tend to have more types per site than smaller settlements and those without mounds. This is especially so for sites in the top three levels of the mound hierarchy but not so much for sites in the lowest level of mound centers. Still, numbers of ceramic types do not correlate well with population ($r = .42$), and neither do the number of mounds predict the number of ceramic types. Location relative to the largest centers may be more significant, as four of the five sites with the most types per site (14 or more) are located in the core (including two settlements that are much smaller than San Joaquín or the Ejutla site). Distance from the large centers may have been a more important factor in access to a range of ceramics than placement in settlement hierarchies.

## Obsidian

Obsidian is not the only highly valued resource that was widely exchanged across pre-Hispanic Mesoamerica, but because it can be identified to specific, localized sources, it provides a means to examine networks of exchange in a way not possible with most other materials recovered in archaeological contexts. There are no known obsidian sources in the state of Oaxaca, so all the obsidian recorded during survey arrived in the valley through trade. Even when the obsidian has not been sourced, color variation provides some clues. For example, few obsidian sources in Mesoamerica have a green hue, so, at a minimum, frequencies of the distinctive green obsidian from the Pachuca source in Hidalgo (the green obsidian source most frequently identified at sites in the Valley of Oaxaca; Elam, 1993; Nolin, 2006) can be compared to gray/black obsidian in Oaxaca, to determine how similar or different the obsidian assemblages are at various sites, subregions, or regions. The greater the differences in sources, the higher the likelihood that there were multiple networks of exchange that were not controlled by or passed through one central place.

Many ceramics can be attributed to specific temporal periods, but (in the absence of technical/laboratory analysis) surface obsidian can be chronologically situated only in reference to the associated ceramics with which it is found. Only for Monte Albán IIIA and V do we have large enough samples of obsidian from single-component contexts to compare the spatial distributions of obsidian in Ejutla and the Valley of Oaxaca and between subregions. Here, we first present general findings that draw on the complete obsidian assemblages for Oaxaca and Ejutla. We employ two units of comparison: the number of loci in each region where we observed obsidian on the surface and the total amounts of obsidian recorded at each site. We also draw on the results of projects that have sourced samples of obsidian from several sites in Oaxaca (from both survey and excavation contexts). Then we discuss in more detail the sample that can be securely dated to Monte Albán IIIA. The Monte Albán V obsidian assemblage is discussed in Chapter 10.

Because the Ejutla region has been demographically marginal to the Valley of Oaxaca throughout much of the past and because it is situated at the southern end of the larger, northern valley and farther from the central Mexican obsidian sources, one might expect that settlements in Ejutla would have been less likely to obtain obsidian (the Guatemalan sources to the south are much more distant). But that is not the case. Obsidian was recorded at 541 sites during the regional surveys of the Valley of Oaxaca and at 103 sites in the Ejutla Valley. As a percentage of the total number of sites in each valley, a slightly greater proportion of sites in Ejutla (24.3%) have obsidian than in Oaxaca (20%). The results are similar in a comparison of the number of loci with obsidian to the number of phase components in each valley (Monte Albán IIIA, IIIB/IV, and V only, as there are so few single component sites with obsidian for the earlier phases). In Ejutla, there were 18.8 loci with obsidian for every 100 phase components compared to only 12.2 in Oaxaca. There was variability across the valley, but only in Etla was overall access to obsidian greater than in Ejutla (Fig. 7.28).

These differences hold up through time. For all phases, a higher percentage of sites in the Ejutla Valley had at least one piece of obsidian compared to Oaxaca (Table 7.11). Only during Monte Albán V was the proportion of sites with obsidian similar in the two valleys. In earlier phases (Early I through IIIA), the proportion of sites in Ejutla with obsidian also surpassed all

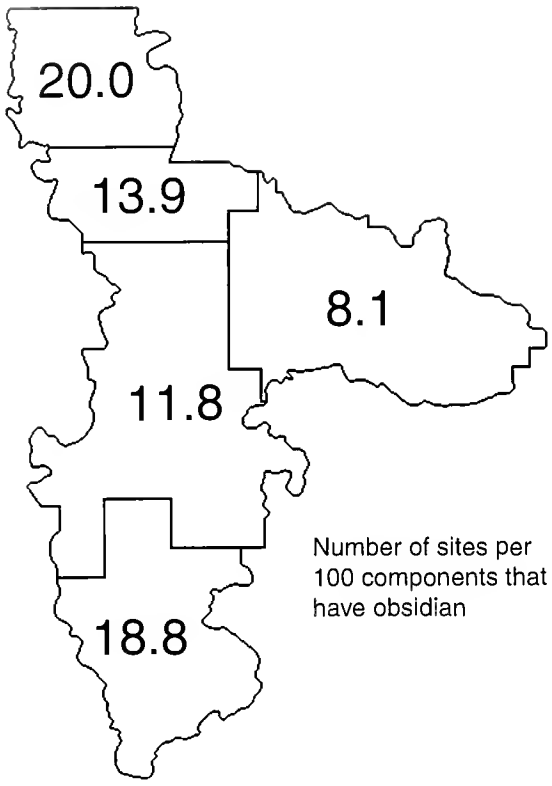



FIG. 7.28. Number of sites per 100 components (IIIA, IIIB/IV, and V) in the Oaxaca and Ejutla Valleys that have obsidian.

subareas of the Valley of Oaxaca. Later in the sequence (Monte Albán IV and V), more sites in Etla had obsidian.

The total quantity of obsidian per capita (outside Monte Albán) also appears to have been higher in the Ejutla region. Not including Monte Albán, approximately 3,500 pieces of obsidian were collected/recorded in the Valley of Oaxaca (Finsten, 1983, app. 2) compared to 1,238 in the Ejutla Valley. Standardized by area, there are 157 pieces of obsidian per 100 $km^2$ in Oaxaca compared to 237 per 100 $km^2$ in Ejutla. The difference per site is even greater—1.2 pieces of obsidian per site in Oaxaca compared to 2.9 per site in Ejutla. For those sites with obsidian, the average in Oaxaca was 6.2 pieces and 12.0 in Ejutla.

The finding that, on a per-capita basis, obsidian was more abundant in Ejutla than Oaxaca throughout most of the pre-Hispanic sequence does not fit a model in which obsidian exchange in the Valley of Oaxaca was centrally controlled by Monte Albán, whose authorities doled out obsidian to other communities (cf. Spencer & Redmond, 2001a, pp. 220–221, 2003, p. 30). In that model, settlements in Ejutla would be expected to have much less obsidian (given their distance from and often lower integration with Monte Albán) than sites in other valley subregions closer to the capital. More likely, the residents of Ejutla obtained at least some obsidian through networks of obsidian exchange that did not pass through the center of the Valley of Oaxaca. The obsidian that was obtained in the Ejutla region through these links was mostly gray or black, as indicated by the lower proportion of green (Pachuca) obsidian in Ejutla compared to Oaxaca.

Sourcing studies on a sample of obsidian (from both excavation and surface collections) from several sites in the Valley of Oaxaca that were all occupied in the Classic period (Elam, 1993; Nolin, 2006) revealed patterns of site-to-site variation that also are not consistent with a model in which pre-Hispanic communities received obsidian via redistribution from the capital (cf. Spencer & Redmond, 2001a, pp. 220–221, 2003, p. 30). Rather, the patterns conform to a model in which different sectors of this valley system acquired obsidian through distinct networks of exchange (Feinman & Nicholas, 2010a, p. 94). For example, gray/black obsidian from the Zaragoza source in Puebla was the most common variety at most Valley of Oaxaca sites (between 50% and 70%) but only 30% of the Monte Albán assemblage (Fig. 7.29). The sample of obsidian from our subsequent excavations at the Ejutla site (e.g., Feinman & Nicholas, 1993) was markedly different from the Monte Albán sample. In the Monte Albán sample, over half of the obsidian was from the Pachuca source in Hidalgo, and less than 2% was from the Ucareo source in Michoacán. The pattern was reversed at the Ejutla site, with less than 10% from Pachuca and almost 40% from Ucareo. No other site in the Valley of Oaxaca came close to the Ejutla site in the proportion of obsidian from Ucareo, indicating that the Ejutla site had its own exchange networks and received obsidian from at least one West Mexican source that was not as heavily accessed by other settlements in the Valley of Oaxaca. This obsidian may have moved into the Ejutla region, from the south, along with resources from the Pacific Coast (see discussion below on marine shell). Rather than controlled by Monte Albán, it seems more likely that obsidian from different sources reached Oaxaca from both the north and the south. The significance of these discrete networks of exchange has economic implications that are addressed later in this chapter when we examine specialized nonagricultural production.

TABLE 7.11. Sites with obsidian in Ejutla and Valley of Oaxaca subareas.

| Phase | Etla | Central | Valle Grande | Ocotlán | Tlacolula | All Oaxaca | Ejutla |
|---|---|---|---|---|---|---|---|
| No. of sites that have obsidian | | | | | | | |
| EI | 32 | 18 | 21 | 4 | 25 | 100 | 13 |
| LI | 79 | 46 | 34 | 13 | 39 | 211 | 33 |
| II | 55 | 9 | 31 | 11 | 48 | 154 | 22 |
| IIIA | 24 | 13 | 66 | 23 | 75 | 201 | 47 |
| IIIB | 70 | 34 | 13 | 1 | 12 | 130 | — |
| IV | 7 | 4 | 20 | 4 | 59 | 94 | 19 |
| V | 140 | 75 | 86 | 40 | 125 | 466 | 86 |
| Percentage of all sites that have obsidian | | | | | | | |
| EI | 42 | 47 | 32 | 29 | 37 | 38 | 62 |
| LI | 36 | 30 | 22 | 29 | 23 | 28 | 52 |
| II | 38 | 38 | 29 | 41 | 22 | 30 | 48 |
| IIIA | 33 | 34 | 21 | 17 | 15 | 19 | 35 |
| IIIB | 24 | 16 | 18 | 20 | 29 | 21 | — |
| IV | 41 | 19 | 22 | 44 | 19 | 21 | 37 |
| V | 30 | 22 | 16 | 18 | 14 | 19 | 24 |

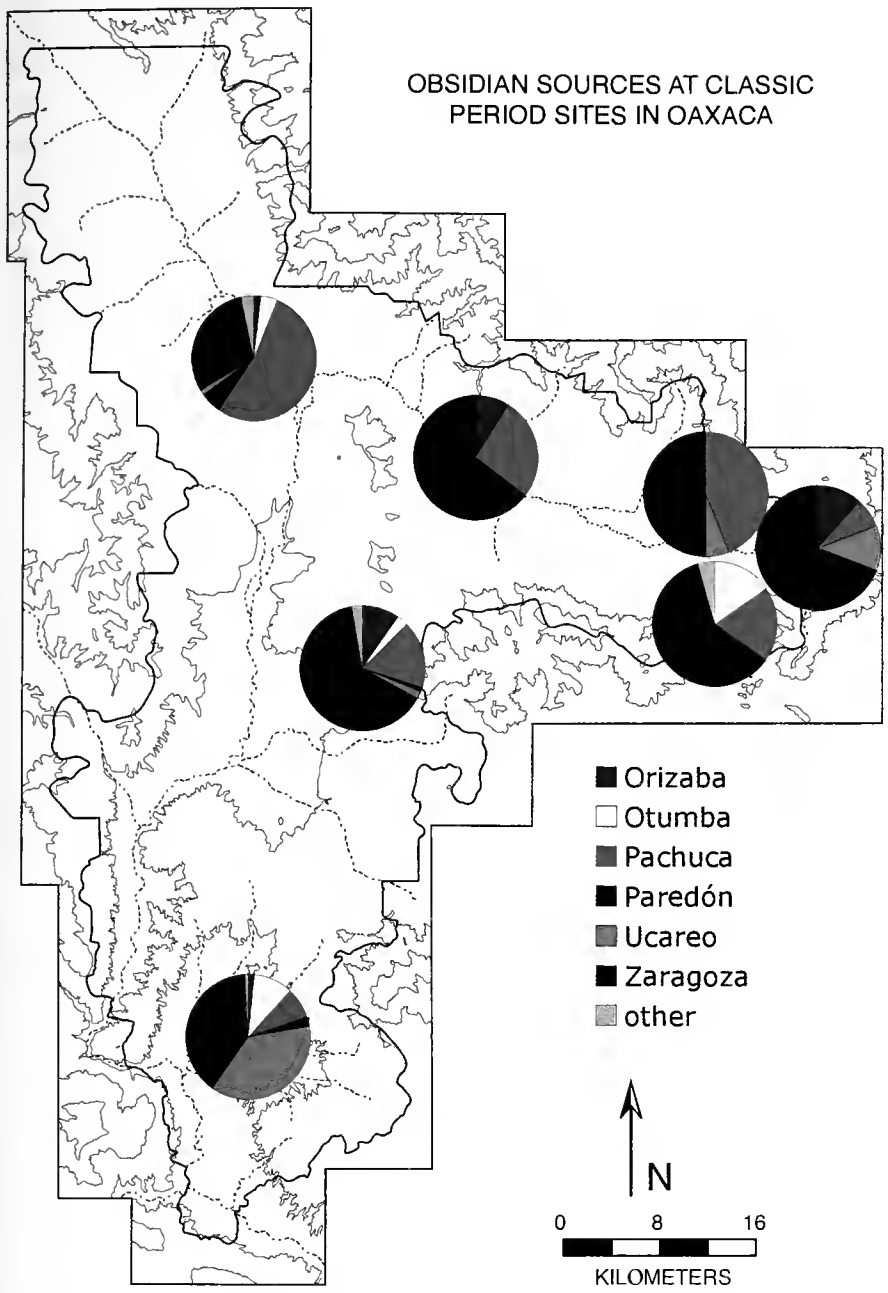



FIG. 7.29. Proportion of obsidian from different sources in stone assemblages at select Classic period sites in Oaxaca and Ejutla (sourcing data drawn from Elam, 1993; Nolin, 2006).

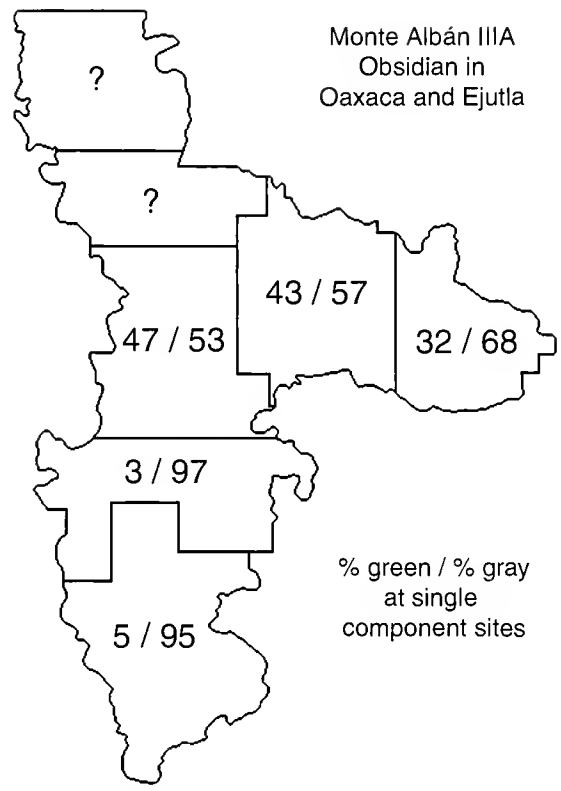



FIG. 7.30. Proportions of green versus gray/black obsidian at single-component Monte Albán IIIA sites in Ejutla and Valley of Oaxaca subregions.

### Monte Albán IIIA Obsidian in Oaxaca and Ejutla

During Monte Albán IIIA, the proportion of sites in the Ejutla Valley that had obsidian is comparable to Etla and Central (Table 7.11). These proportions are much greater than in other valley subareas. So, in general, sites in the core cluster of the Monte Albán polity had greater access to obsidian than sites located farther away. Yet this dynamic did not apply to the Ejutla region, which served as a gateway into the Oaxaca Valley system from the south. Even though Ejutla was more integrated into the Monte Albán polity than ever before (or later), the inhabitants of the region still maintained a degree of autonomy in long-distance exchange networks.

The Ejutla Valley's gateway position in exchange also is supported by the greater per-capita abundance of obsidian that can definitely be attributed to IIIA at sites in Ejutla. In both valleys, the single-component IIIA sample is approximately 20% of the total obsidian recorded at all IIIA sites in each region (1,137 pieces in Oaxaca and 703 in Ejutla). For Oaxaca, most of the single-component IIIA obsidian (75%) was recorded in Tlacolula (there are few single-component IIIA sites in Etla and Central, and no obsidian was recorded at those sites), so here we compare Ejutla to Tlacolula. In this sample, obsidian is twice as abundant in Ejutla, 9.7 pieces per 1,000 people versus 4.3 in Tlacolula.

Although the obsidian recovered on regional survey in Oaxaca and Ejutla has not been sourced, the proportions of green and gray/black obsidian in the single-component sample do provide information on the likelihood of different exchange networks. Gray and black obsidian could be from any of various central Mexican sources in Hidalgo, Puebla, Michoacán, and, Veracruz, whereas the green obsidian comes from many fewer sources, most at or near Pachuca (Hidalgo). In Monte Albán IIIA, there was more gray/black obsidian than green in both the Oaxaca Valley and the Ejutla Valley. Only 6% of the single component IIIA obsidian in Ejutla was green compared to 28% in Oaxaca. These proportions were more equal near the center of the Valley of Oaxaca, with gray/black obsidian predominating to the east and south. Green obsidian also was extremely rare in the southernmost part of the Valley of Oaxaca (Fig. 7.30). Whereas most green (Pachuca) obsidian likely arrived in the Ejutla region via channels that passed through the Valley of Oaxaca to its north, more gray/black obsidian may have reached Ejutla through trade connections that bypassed the Valley of Oaxaca. Monte Albán's special ties with Teotihuacan (Millon, 1973, p. 42; Marcus, 1983d, 2009, pp. 97–98; Paddock, 1983b; Blanton et al., 1993, p. 88), which controlled the green Pachuca obsidian source in Hidalgo (Spence, 1981), likely was one important factor in the variable distribution of green obsidian. Green obsidian may have entered exchange networks in the Valley of Oaxaca largely through Monte Albán, whereas gray/black obsidian entered the valley system from several directions, including from the south though Ejutla.

## Specialized Nonagricultural Production

Evidence of specialized nonagricultural production abounds on the surface of sites across the Valleys of Oaxaca and Ejutla (Fig. 7.31). During the systematic survey of Monte Albán, Blanton (1978, pp. 75–96) reported the residue of a range of craft activities on residential terraces, including shell working,

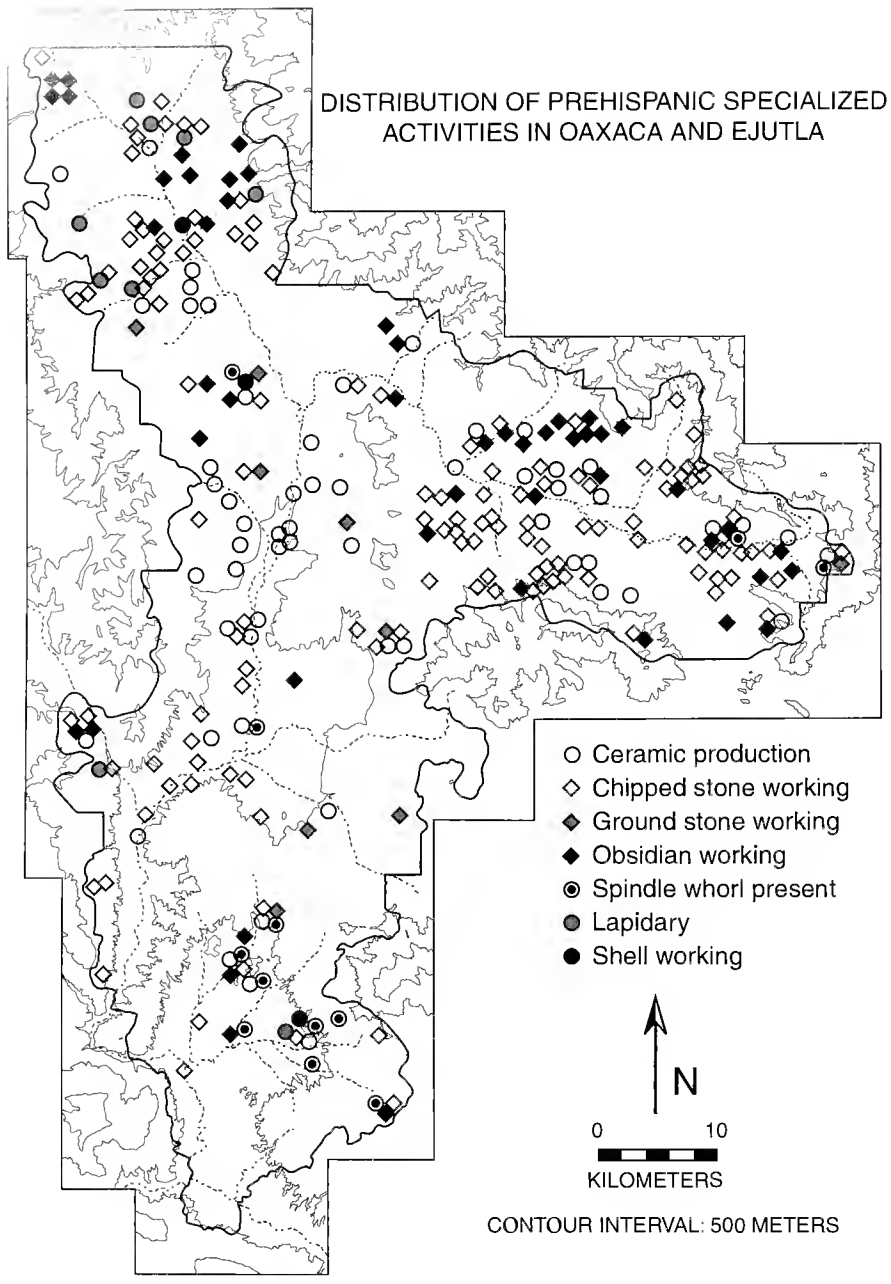



FIG. 7.31. Distribution of prehispanic specialized activities recorded during systematic regional surveys in Ejutla and the Valley of Oaxaca.

obsidian working, and mano and metate production. High quantities of kilnwasters at the Atzompa subdivision (Blanton, 1978, p. 91) indicated ceramic production (Feinman, 1980, 1982, p. 197). The subsequent regional surveys in the Valley of Oaxaca documented this same range of specialized activities at sites throughout the region, in both large and small settlements (Blanton et al., 1982; Finsten, 1983; Kowalewski et al., 1989). As we noted above, evidence of specialized production was especially abundant on residential spaces at hilltop terrace sites (Kowalewski et al., 1989, pp. 240–248).

Indicators of ceramic production that pertain to all phases from Monte Albán Early I to V are found at a number of sites in the valley (Feinman, 1980, 1982, 1986), but because many sites have multiple components, few other craft activities can be attributed definitively to any phase prior to Monte Albán IIIA based on surface remains alone. With the growth of sites and population that occurred between Monte Albán II and IIIA, the number of sites with surface indicators of specialized nonagricultural production greatly expanded, and because of the establishment of many new settlements, those activities that can be attributed to IIIA were present at dozens of sites across the valley.

In the Ejutla Valley, there also are several sites where evidence of specialized activities is present with Late I or II ceramics, but none of those activities can definitely be tied to those early phases. We have many more surface observations and artifact collections that contain evidence of nonagricultural economic activities, including ceramic production, stone tool manufacture, and obsidian working, from sites that were occupied during Monte Albán IIIA or later, and at many sites at least some of the aetivities can be tied to a specific phase. Based on regional surface findings, there is much stronger evidence for shell working and cloth-related activities, such as spinning, in Ejutla compared to Oaxaca (Feinman & Nicholas, 1991b, 1992a). Below we first discuss the evidence for specialized nonagricultural production in Ejutla, beginning with the shell and spindle whorls, and then discuss the implieations for production and exchange in Oaxaca.

## Marine Shell

Although the Ejutla Valley is only one-fourth the size of the Valley of Oaxaca, marine shell was recorded on the surface of a comparable number of sites in both regions (22 sites in Ejutla and 24 sites in Valley of Oaxaca, including Monte Albán; Fig. 7.32). Seventeen of the Ejutla sites were occupied in Monte Albán IIIA, five of which were single component, indicating that shell working was an important economic activity in Ejutla during the Classic period.

Marine shell in the Ejutla region was concentrated in sites near the Ejutla River and its major tributaries. By far the greatest quantity of shell was found at the Ejutla site (IIIA-74); hundreds of pieces of shell littered the surface in one small sector of the site (Fig. 7.33), along with numerous worn obsidian blades that were used to work the shell (Fig. 7.34). Although two other two sites had between 10 and 25 pieces of shell, most of the settlements in the Ejutla Valley had fewer than five pieces (Fig. 7.32). These sites were located in the main Ejutla River drainage, along northern tributaries of the Ejutla River, at several large sites on the lower Atoyac River near the confluenee with the Miahuatlán River, and on the ridges to the north and south of the Coatecas pass at the eastern end of the valley. No shell was recorded at sites along the Atoyac River in the westernmost part of Ejutla, in the area that forms an extension of southern Valle Grande or in the northeastern part of Ejutla that abuts Ocotlán.

Clearly worked shell, including several shell beads, was present at 11 sites; however, most of the worked shell was at the Ejutla site. At least one piece of worked shell was found in association with Monte Albán Late I ceramics at two small sites near the Ejutla site, and one bead was present at a single-component Monte Albán IV site. The other eight sites were occupied in Monte Albán IIIA. Many of these sites also were occupied in Monte Albán II, IIIB–IV, or V, so we cannot rule out shell-ornament production in these other phases. The most widespread evidence, however, pertains to IIIA, both at the Ejutla site (IIIA-74) and at a probable shell-working area to the south in the Miahuatlán Valley (Brockington, 1973). The only other sites in the Valley of Oaxaea with possible shell working are Monte Albán and San José Mogote.

Most of the worked shell is located in the central core of the Ejutla Valley and not in those areas closer to southern Valle Grande/Ocotlán. The only sites outside this core area that have shell are located to the south. The four largest sites at the western and northern edges of the Ejutla settlement system in IIIA have no shell. In contrast, the four largest sites in the southern part of Ejutla have at least a few pieces of shell, and two have at least one piece of worked shell (Fig. 7.35). The closest source of the shells was the Pacific

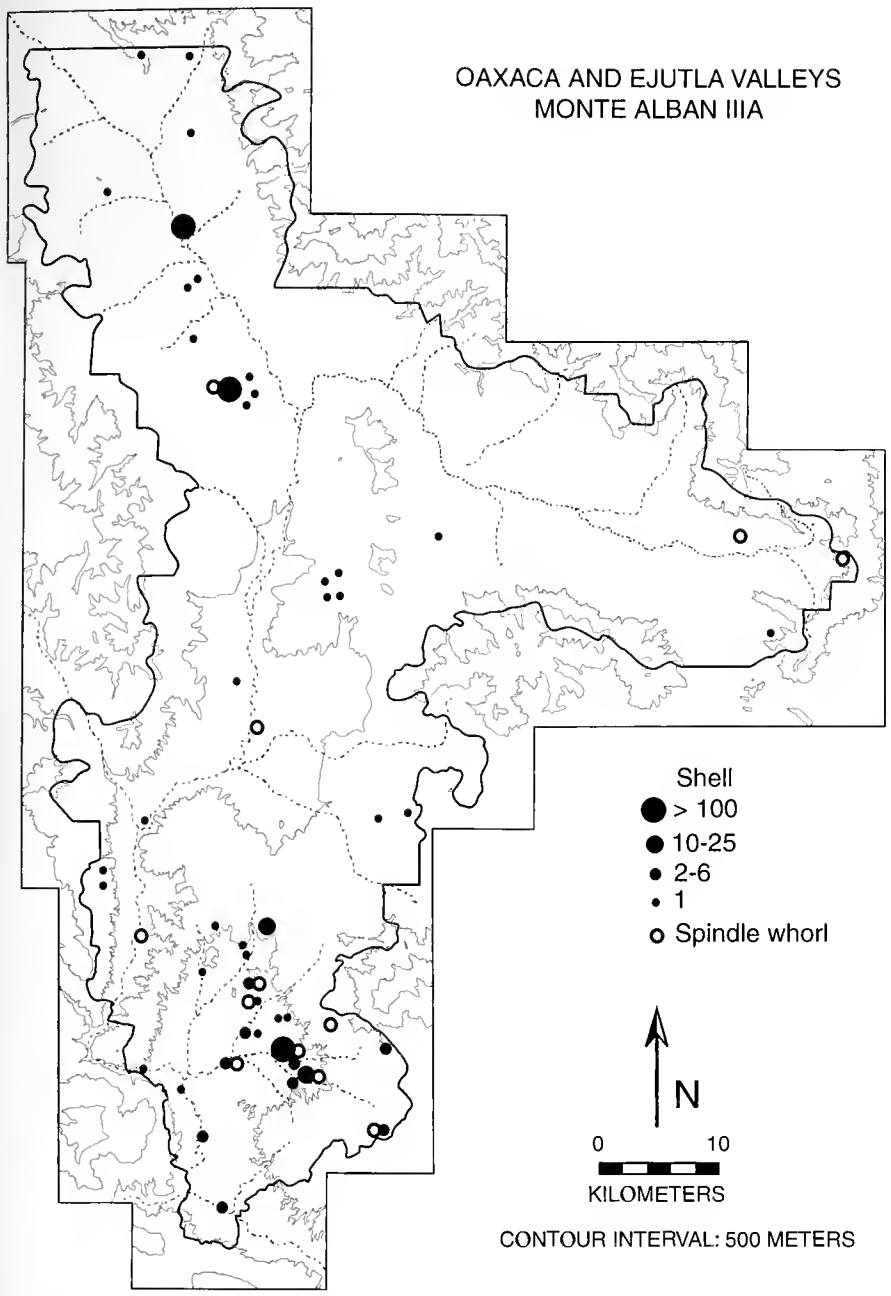



FIG. 7.32. Distribution of surface marine shell and spindle whorls in Ejutla and the Valley of Oaxaca.

Coast, roughly 100 km away across high mountains. As the shell entered the Ejutla Valley from the south, some of the shell remained in the larger sites. Some shell also found its way up to San Joaquín and other smaller sites in north-central Ejutla, either through trade with the artisans of the Ejutla site or by following a route up through western Ejutla, along the major northern tributary of the Ejutla River. The dispersal of shell in both large and small sites close to the

FIG. 7.33. Worked marine shell and debris at the Ejutla site.

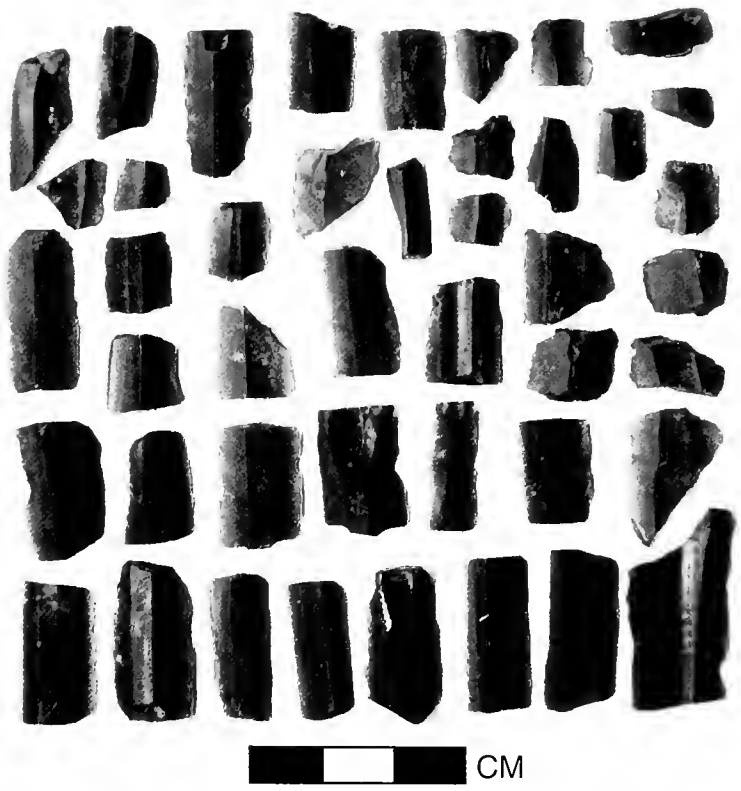



FIG. 7.34. Worn obsidian blades from shell-working area at the Ejutla site.

Ejutla site and the fact that San Joaquín had no more shell (on the surface at least) than other sites suggests that the exchange of shell objects was not controlled by central authorities.

The dense surface concentrations of worked shell at the Ejutla site raised many questions that we could not answer from surface collections alone, so in the early 1990s we began excavations in an area of dense surface shell at the site. We confirmed not only that the shell working dates largely to the Classic period (including Monte Albán IIIA) but also that most of the shells are Pacific Coast species (Feinman & Nicholas, 1993, 1995, 2000; Feinman et al., 1993; see also Keen, 1971). The excavations tied the shell working to a small house whose members also engaged in ceramic production and made the chert microdrills they used for perforating shell ornaments (Feinman et al., 1993; Middleton, 1998). Very little of the shell was consumed by the residents of this house, indicating that the finished objects were made largely for exchange. Similarities in shell species and ornament forms are present at Monte Albán, and at least some of the shell ornaments made in Ejutla likely were traded to the capital (Feinman & Nicholas, 2000, p. 130).

### Spindle Whorls

Spindle whorls were a rare find during the surveys of both regions. Yet, in spite of the Valley of Oaxaca's much larger size, we recorded twice as many whorls in the Ejutla Valley (six in Oaxaca, including two at Monte Albán, and 11 in Ejutla). Outside Monte Albán, most reported surface whorls in Oaxaca are from eastern Tlacolula (Fig. 7.32). Half the spindle whorls in Ejutla are from two sites in the north-central part of the valley, San Joaquín (IIIA-24) and EJ-EJ-SJ-2 (IIIA-31). We found only one whorl on the surface at the Ejutla site (IIIA-74) but 80 more during the excavations (Feinman & Nicholas, 2004b).

Most of the spindle whorls in Ejutla pertain to Monte Albán IIIA. Eight of the 11 were found at five sites with IIIA

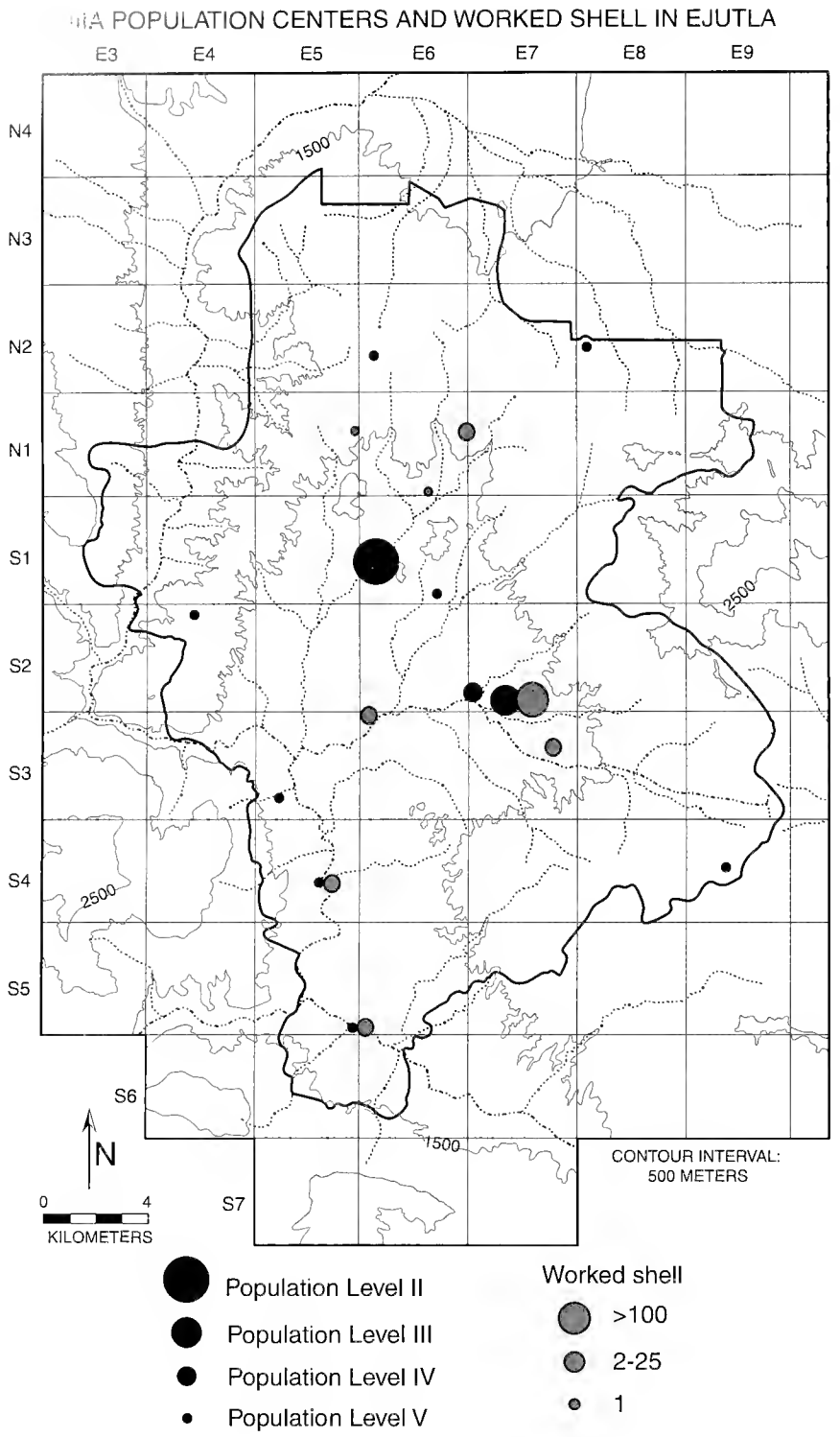



FIG. 7.35. Monte Albán IIIA population centers and worked shell in Ejutla.

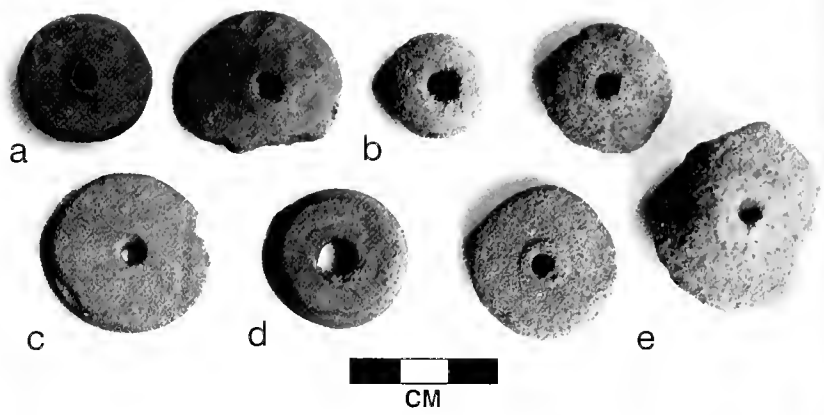



FIG. 7.36. Complete spindle whorls collected during the regional survey of Ejutla, a: EJ-CA-CA-13, b: 2 from EJ-EJ-SJ-6 (San Joaquín), c: EJ-TAN-TAN-1, d: EJ-EJ-EJ-30, e: 3 from EJ-EJ-SJ-2.

ceramics, and five of the whorls are single-component IIIA, including three at EJ-EJ-SJ-2 (IIIA-31). All but one of the whorls thought to be IIIA were found at sites near the core of the Ejutla region, at or near San Joaquín. The only other phase to which more than one whorl might pertain is Monte Albán V. Although spindle whorls were recorded at five Monte Albán V sites, none had more than one.

Most of the Ejutla spindle whorls, from both the surface and excavated contexts, are small (Fig. 7.36). They fall into two basic forms—whorls that were fashioned from wet clay and perforated before firing and simpler, rounded sherd disks that were fashioned from broken pieces of pottery and then perforated (Carpenter et al., 2012). The small hole diameters of almost all the Ejutla whorls fit into Mary Parsons's (1972) category of whorls that are used for spinning cotton.

The spindle whorl assemblage in eastern Tlacolula is very different. Although only a few spindle whorls were found on the surface at the Mitla Fortress and Guirún, subsequent excavations at the Mitla Fortress (Feinman & Nicholas, 2010b) and El Palmillo (Feinman & Nicholas, 2009) have produced hundreds of spindle whorls. Many of those whorls are the larger variety that would have been used to spin coarser fibers from xerophytic plants, such as maguey (Parsons, 1972), which grows much more abundantly in eastern Tlacolula than elsewhere in the valley.

These findings raise questions about what fibers the Ejutleños were spinning and, if cotton, how they obtained it. Was cotton grown in the Ejutla region in the past, or was it imported from lower coastal areas? According to Jacqueline Saindon (1977), the *Suma de Visitas* lists only two areas in the Valley of Oaxaca that either grew cotton (Coyotepec) or provided woven cotton goods (Miahuatlán) as tribute to central Mexico during the Late Postclassic. No mention is made of Ejutla. Although cotton is not grown in the area today, the Ejutla Valley is slightly lower in elevation than the Valley of Oaxaca, including Coyotepec, and is located closer to the Pacific Coast. There are three important characteristics for growing cotton in noncoastal areas: (1) alternating rainy and dry seasons, (2) no danger of frost, and (3) irrigation or high-water-table land near rivers (Saindon, 1977); all apply to Ejutla. There are small patches of rich flat land, with high water table, along the Atoyac River near La Compañía and Amatengo in southern Ejutla that would have been suitable (however, no pollen studies have been conducted to confirm the pre-Hispanic presence of cotton). Although these areas were settled during prior phases, it was during Monte Albán II and IIIA that important centers were located along this stretch of the Atoyac. As the Monte Albán state expanded beyond the Valley of Oaxaca in Monte Albán II, modes of economic transfer also may have shifted and intensified in the Ejutla region with the possible expansion of marketplace exchange and greater intraregional interdependence (e.g., Feinman & Nicholas, 2010a). The intensification of exchange could have expanded opportunities for cotton growing in Ejutla as well as increased trade for cotton from lower, more tropical areas farther south (with more protected extraregional trade corridors). In Monte Albán IIIA, with Teotihuacan domination of areas to the north and the loss of the low-lying Cuicatlán de Cañada where cotton grows, the governing authorities at Monte Albán and other population centers in the Valley of Oaxaca may have focused more heavily on the Ejutla Valley settlements and their connections to the south for products such as cotton and shell.

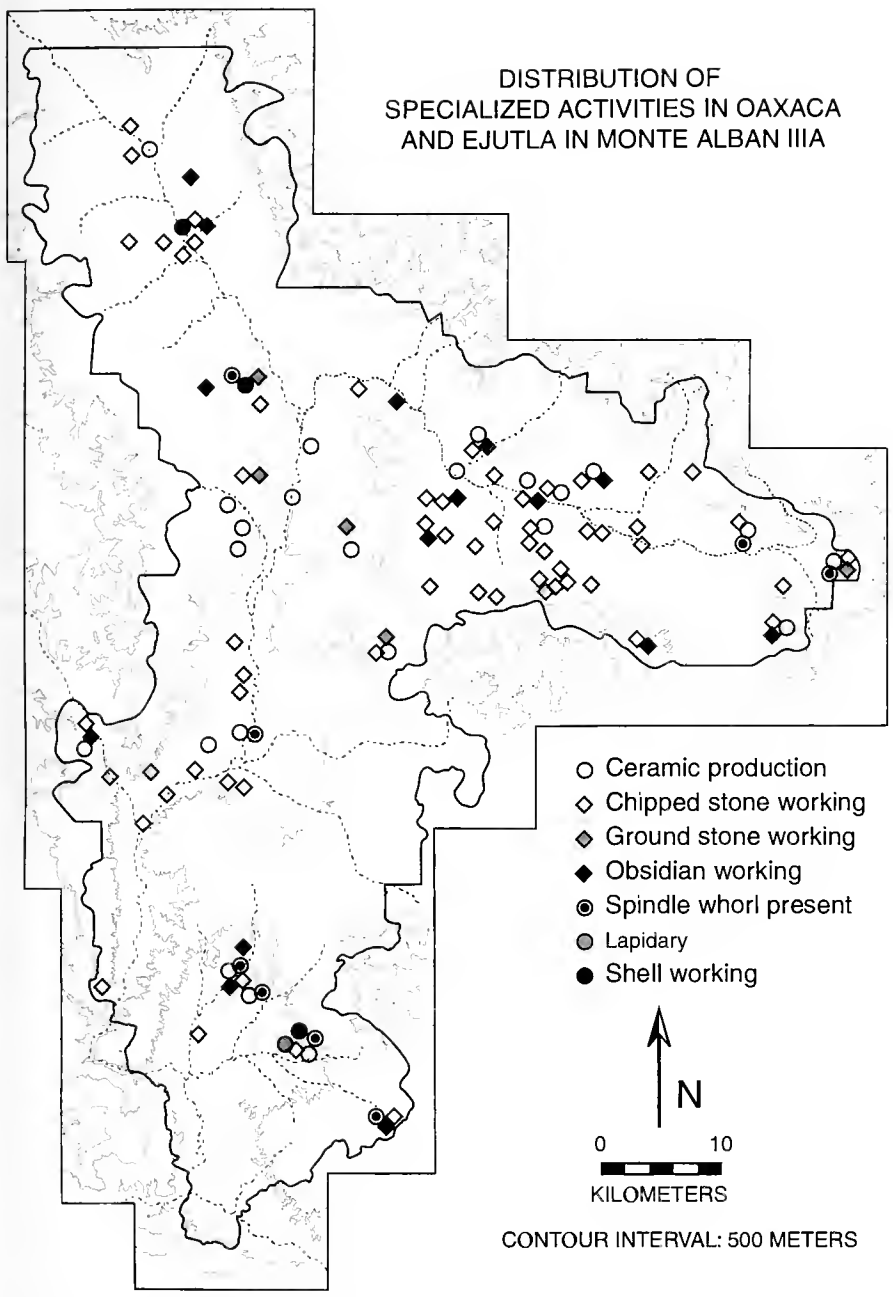



FIG. 7.37. Distribution of specialized activities in Oaxaca and Ejutla in Monte Albán IIIA.

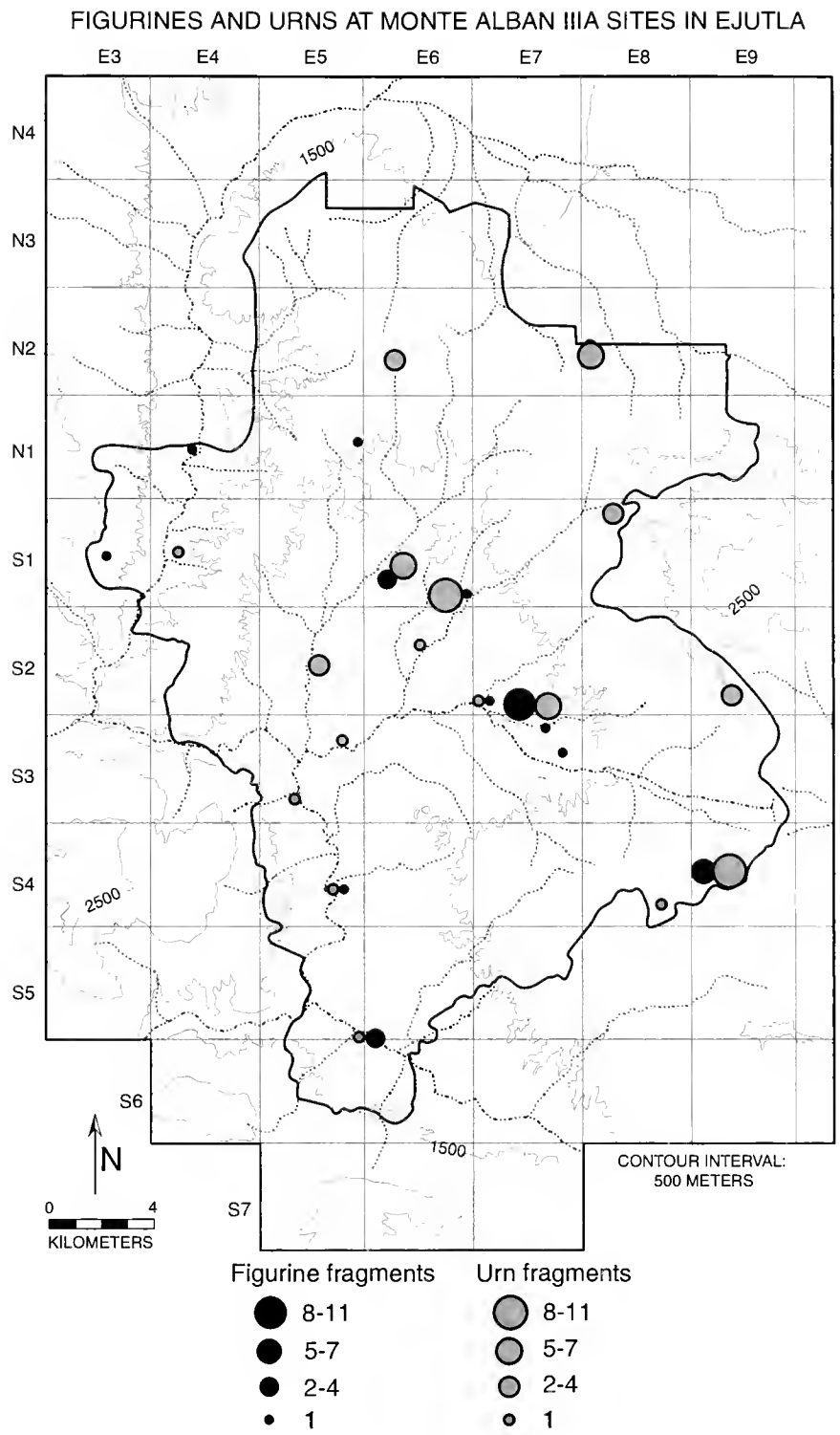



FIG. 7.38. Figurines and urns at Monte Albán IIIA sites in Ejutla.

## Ceramic Production

In contrast to shell and spindle whorls, we recovered less evidence for ceramic production in Ejutla than in Oaxaca (Fig. 7.37). During the Ejutla survey, possible ceramic production was recorded at three Monte Albán IIIA sites. The evidence for ceramic production consists of kilnwasters, fired clay concretions, and unusually high quantities of specific ceramic forms. At EJ-EJ-SJ-2 (IIIA-31), there were unusually high quantities of fancy but poorly made G-23s. Given the small size of that site, the number of urn fragments we recorded there is high so that the density of urn fragments was much greater than at the two nearby population centers—the Ejutla site and San Joaquín. It seems likely that potters at EJ-EJ-SJ-2 were making urns for exchange to their larger neighbors. At the Ejutla site, the number of figurine fragments on the surface was unusually high, and we suspected that they were making figurines there. Most of the other figurine fragments were found in nearby settlements, in contrast to the wider dispersal of urn fragments (Fig. 7.38) and G-23s across the region (Fig. 7.27). We suspect that potters at EJ-EJ-SJ-2 and the Ejutla site exchanged their goods through somewhat different networks. More urns were found in northern and eastern Ejutla, whereas figurines were more concentrated around the Ejutla site and to the west and south. One site with boundary functions in southeastern Ejutla, EJ-CA-CA-13 (IIIA-135), appears to have engaged in exchange with both groups of potters.

During subsequent excavations at the Ejutla site, we confirmed ceramic production for the Classic period (including Monte Albán IIIA). In addition to hundreds of kilnwasters from a variety of utilitarian vessel forms and several ash-filled firing pits, there were dozens of figurine wasters and molds commingled with domestic refuse associated with one small house (Balkansky et al., 1997; Feinman & Balkansky, 1997; Feinman & Nicholas, 2000). The sample of figurines from the excavations numbers over 2,000. In a petrographic study of a sample of ceramic vessels and figurines from the site, we confirmed that potters at the site made a variety of ceramic forms from local clays (Carpenter & Feinman, 1999). One of the tested figurines was from the surface collection at EJ-CA-CA-13; its composition matched that of figurines from the Ejutla site, documenting exchange between the two sites. In addition, several other figurines that were collected during the Ejutla Valley survey were almost identical in decoration and form to the figurines that were made at the Ejutla site (Feinman, 1999a).

The three sites with evidence of ceramic production are located in the center of the Ejutla Valley, where the population was heavily concentrated in Monte Albán IIIA. We recognize that pottery likely was made at other sites in the region at this time as well, though perhaps at lower intensities. We also found evidence of other economic specializations, including spindle whorls, at all three sites; shell, lapidary, and stone working at the Ejutla site; and chipped stone and obsidian working at San Joaquín.

### Chipped Stone, Lapidary, and Obsidian Working

Chipped stone cores and debris, generally from local chert and quartz sources, were noted on the surface of dozens of sites, especially in eastern Tlacolula, during the regional surveys. In the Ejutla Valley, chert debris indicative of stone working (cores in conjunction with unusually high quantities of small flakes) was recorded at nine sites, most of which pertain to the Classic and Postclassic. Monte Albán IIIA ceramics were associated with the stone debris at five of the sites (Fig. 7.37), including the two largest (San Joaquín and the Ejutla sites), two hilltop terrace sites (EJ-CA-CA-13 and EJ-SAZ-SAZ-4), and one small site (EJ-LC-AB-1). There is a chert source within the bounds of one of the terrace sites (EJ-CA-CA-13). At no site, however, was the surface debris indicative of large-scale production.

Even though more sites in the Ejutla region had obsidian, as we discussed above, we recorded less evidence of obsidian working there than in the Valley of Oaxaca; at only four sites did we find cores and/or high quantities of flakes relative to blades. The strongest surface evidence for production for exchange was during Monte Albán V, which we discuss in Chapter 10. One small site with a green core and flakes was occupied during multiple phases, including Monte Albán IIIA and V. Gray and black obsidian was worked at the two sites (San Joaquín and EJ-CA-CA-13) that can definitely be attributed to IIIA. Both are large sites with other economic specializations as well, but at neither site does obsidian working appear to have been of high intensity.

Surface evidence of lapidary activities is rare in both valleys. In Oaxaca, this specialization occurred mostly in the Etla arm during the Classic (definitely during the Late Classic, or Monte Albán IIIB–IV) and the Postclassic. The only evidence in the Ejutla region is at the Ejutla site. In the same area of the site where there were dense concentrations of shell, kilnwasters and figurine fragments, chipped stone debris, and many obsidian blades, we also found stone debris indicative of lapidary activities. During our subsequent excavations, we recovered lapidary debris, including onyx drill plugs and plaques, in association with the shell. The diameter of the drill plugs is the same as the diameter of a number of small shell disks at the site, indicating that the same drilling technology was used to work both materials (Feinman & Nicholas, 2000, p. 135).

### Discussion

Many models emphasizing local factors have been proposed to explain the distribution of specialized nonagricultural production, and in highland Mesoamerica, given the limitations of pre-Hispanic transportation technology, this was a reasonable starting point. Eastern Tlacolula, for example, is the driest, least agriculturally productive part of the Valley of Oaxaca, and beginning in Monte Albán IIIA, that area experienced tremendous population growth. At the same time, a series of hilltop terrace sites with evidence of economic specializations were constructed there. It seemed logical that specialization might have been a response to population pressure or inadequate agricultural resources (e.g., Arnold, 1975, 1980; Howard, 1981). So we used the regional survey data on economic specialization (Blanton et al., 1982; Kowalewski et al., 1989) and land use studies (Kowalewski, 1982; Nicholas, 1989) to test that supposition. We found no correlation between the location of specialized activities and the distribution of poor agricultural resources (Feinman & Nicholas, 1991b). Instead, craft specialization was just as likely to occur in areas with productive agrarian resources; an even stronger relationship was present between craft specialization and high population (Feinman & Nicholas, 1991b, p. 251). Hilltop terrace sites generally had dense, nucleated populations. That may be an important factor in why we often found evidence of craft specialization at them, whether or not they were well situated relative to good agricultural land, as clearly many were not. There also are many more loci of specialized nonagricultural production in Oaxaca and Ejutla than there are hilltop terrace sites, and not all sites with specialized production were large, so clearly other factors were at work as well.

One important variable that made it possible for people to live in hilltop terrace sites in places like eastern Tlacolula was the greater economic integration that was present in the region during Monte Albán IIIA. There were other resources in those areas that could be used to produce economic products to exchange for the food they could not grow. In earlier studies, the potential role of xerophytic plants to provide nutrition and fiber for a range of economic goods was underestimated. The residents of terrace sites did not turn to craft specialization only after suffering crop failures; rather, the integrated nature of the IIIA economy made it possible for people to settle in hilltop locations, far from good farmland, where they could produce a variety of goods to exchange for the food that they could not grow in sufficient quantities.

On regional survey, we often found evidence of two or more economic specializations at one site that all could be attributed to the same time period. And on the terrace sites, at least, we at times could tie these activities to individual residences, indicating that these specialized activities were occurring in domestic contexts. Our subsequent excavations at the Ejutla site and two hilltop terrace sites in eastern Tlacolula confirmed the practice of multiple nonagricultural specialized activities by individual households (e.g., Feinman & Nicholas, 1995, 2000, 2004b; Feinman et al., 2002, 2006; Haines et al., 2004). The artisans likely were not full-time, but neither did they engage in craft activities only as an activity secondary to the primary pursuit of agriculture (Feinman, 1999a). At the Ejutla site, craft specialization included relatively high-intensity production for exchange. At the terrace sites, households practicing multiple crafts likely devoted considerable time to them, often using the same suite of plant and animal resources for nutrition and specialized economic activities.

Also of significance is that the range of crafts varied from site to site and between subregions (Feinman & Nicholas, 1992a; Fig. 7.37). Ceramic production is found throughout the region, especially in areas with higher populations (Feinman & Nicholas, 1992a, p. 85). Chipped stone working also is widespread but more prevalent in Tlacolula and then in Etla; there are many known chert sources in both areas. Obsidian working occurred mostly in Tlacolula and Etla, with a small cluster in the central

TABLE 7.12. Estimated archaeological, resource-based, and average labor-based potential populations for Ejutla and Valley of Oaxaca subregions in the Monte Albán IIIA.

| | Ejutla | Etla | Central | Northern Valle Grande | Southern Valle Grande | Western Tlacolula | Eastern Tlacolula |
|---|---|---|---|---|---|---|---|
| Estimated archaeological population | 14,656 | 5,492 | 18,322 | 26,576 | 23,944 | 29,172 | 16,615 |
| Resource-based potential population* | 67,900 | 80,200 | 37,100 | 80,200 | 70,000 | 63,600 | 28,800 |
| Average labor-based potential population** | 19,000 | 17,700 | 6,900 | 40,300 | 34,400 | 39,100 | 10,200 |

* Based on full exploitation of all agricultural land resources in each subregion.

** Based on available labor supply and equal use of Class I and II land near recorded settlements.

Ejutla Valley. Lapidary work is most evident in Etla (at least by the Late Classic). Spindle whorls are found mostly in the Ejutla region (for cotton) and eastern Tlacolula (for a range of fibers, including maguey). Shell working was a more significant specialized activity in Ejutla. The interpretation drawn from these patterns is that ceramics and stone tools were more often made for local exchange between neighbors and nearby sites, whereas obsidian, fiber products, and shell ornaments also were made for exchange beyond local communities.

This web of specialized nonagricultural goods being produced in domestic contexts in hundreds of locations across the valley would be difficult for central authorities to manage or control (Feinman & Nicholas, 2004b, 2010a). Redistribution through central nodes would have been difficult to implement given lack of pack animals; rather, some kind of marketplace exchange was probably in place at least by the Early Classic, if not before (Feinman et al., 1984b; Blanton et al., 1982, pp. 65–68, 1999, p. 100; Blanton 1983b). At a number of sites, including Monte Albán, El Palmillo, and the Mitla Fortress, there are large plazas at the edges of the communities that lack monumental architecture and are situated near ancient roads or access routes; these spaces are ideally located to have served as arenas of marketplace exchange by also being accessible to the residents of other communities (Blanton, 1978; Feinman & Nicholas, 2004a).

## Human/Land Relationships

Although populations in Ejutla and the Valley of Oaxaca were higher during Monte Albán IIIA than ever before, actual populations remained far below the resource-based potentials for both valleys, about 32% in Oaxaca and 22% in Ejutla (Table 7.12), in part because maize yields increased steadily over time (Kirkby, 1973). Still, the archaeological populations were closer to hypothetical maximum carrying capacities than at any other time in the pre-Hispanic past. Nevertheless, based on the analysis of a small sample of excavated skeletons from 14 sites in the Valley of Oaxaca spanning the Early Formative (ca. 1400 BC) through the Postclassic (ca. AD 1400), Denise Hodges (1989, p. 71) found no significant changes or trends in patterns of health that would indicate exacerbated dietary stress in the Valley of Oaxaca during Monte Albán IIIA.

Except for Etla, which experienced population decline, the population was more evenly spread across the region, with new large population centers in northern Valle Grande and western Tlacolula. The spread of population did not correspond closely to the distribution of prime agricultural resources; populations in Tlacolula and Central were at 40–50% of total capacity, whereas in the Valle Grande populations were about 33% of capacity (Nicholas, 1989). The population in Etla was less than 10% of capacity.

There are large expanses of good farmland in the Valle Grande, so settlement expansion and population growth there would not be unexpected. But population growth was just as high in the drier eastern, Tlacolula arm of the valley (Feinman et al., 1985, table 2). Corn harvests are less reliable there, and that subvalley is more subject to drought. Yet the region abounds with a range of xerophytic plants that provide nutrition and economic products, such as ixtle (Feinman & Nicholas, 2005; Feinman, 2006; Feinman et al., 2007). Large settlements were established in areas where crop (maize) failures were a greater likelihood but where a suite of other resources were available to provide food and economic products that could be exchanged for maize grown elsewhere in the region. Rather than turn to craft specialization because of limited agricultural potential, it seems more likely that the greater economic integration across the valley that was ushered in during Monte Albán IIIA allowed the spread of settlement into these areas to take advantage of a different set of resources (Feinman & Nicholas, 2005; Feinman, 2006).

Most of the population growth in the Ejutla Valley between Monte Albán II and IIIA occurred in the central part of the valley along the Ejutla River on some of the best agricultural land of the valley, but also on a series of low piedmont hills in north-central Ejutla that are surrounded by smaller patches of good land. If good farmland had been the primary factor, the largest settlement would have been the Ejutla site and not San Joaquín. In this sense, settlement patterns in Ejutla were most similar to those in Oaxaca during Monte Albán IIIA, with large nucleated centers not located proximate to the region's best farmland.

Archaeological populations, of course, were much closer to the levels that could have been supported by the available labor supply, and this varied greatly by subregion of the valley. Prior to Monte Albán IIIA, only the Central subregion—to feed Monte Albán's large population—required food imports. Farmers in Etla and northern Valle Grande could have produced enough surpluses to make up the shortfall and likely engaged in exchange with the capital. But in IIIA, another subregion, eastern Tlacolula, also had populations higher than could have been supported on maize agriculture alone. Populations in the Ejutla Valley reached 75% of levels that could have been supported, similar to levels in the Valle Grande and western Tlacolula (Nicholas, 1989).

Populations were high enough in western Tlacolula and the Valle Grande that significant surpluses were possible (Fig. 7.39). The population was not as high in Etla, yet because of the concentration of good agricultural land there,

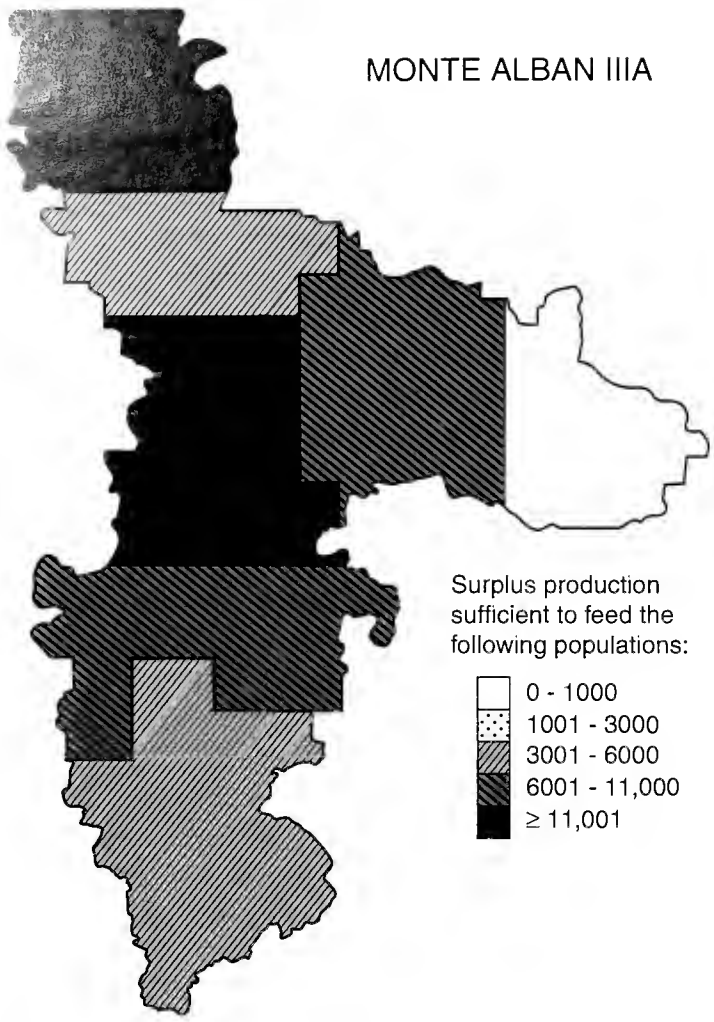



FIG. 7.39. Monte Albán IIIA surplus in Ejutla and Valley of Oaxaca subregions (based on rural producers, Central area does not include Monte Albán's population).

farmers in the area could have grown about three times the crops they required for themselves, with substantial surpluses to engage in exchange with the capital. As before, surpluses from rural producers in the Central subregion, along with produce from Etla and northern Valle Grande, would have been sufficient to meet Monte Albán's needs. In addition to engaging in trade with the capital, farmers in western Tlacolula likely also provided corn to the large centers in eastern Tlacolula in exchange for a range of specialized goods, including some made from maguey or other xerophytic plants.

In part because of lower population densities than elsewhere in the Valley of Oaxaca, potential surpluses were lower in Ejutla. The location of the region's largest center, San Joaquín, also was a factor. The densest habitation in the Ejutla Valley, including San Joaquín, was in the center of the region around the Ejutla River and its northern tributaries. Although there is good agricultural land in this part of the valley, the new center was situated on a series of piedmont hills in north-central Ejutla, near a northern tributary of the Ejutla River, an area with small patches of good farmland. The concentration of population was so great at San Joaquín that, like the other nucleated centers in Oaxaca, nearby farmers could not have grown enough food to feed all the residents of the center. They quickly outstripped the potential of the better farmland in the surrounding area, and the center likely had to import food grown elsewhere along the Ejutla River. The problem would have been exacerbated in dry years.

Grain tribute/exchange from the Ejutla Valley may have been a more important consideration for Monte Albán than it had been earlier, yet transportation for the three-to-four-day round-trip from the Ejutla region to Monte Albán likely would have been prohibitively costly. And the residents of San Joaquín may have consumed much of the grain surpluses grown in Ejutla. This surplus grain may have helped sustain governing authorities and others who lived or passed through San Joaquín but had close affiliations with Monte Albán. Since Monte Albán could have been provisioned by surpluses from areas closer to the capital, it seems more likely that Monte Albán's principal interests in Ejutla were as a link to exotic (coastal and lowland) products and possibly for defense along the southern edge of the Monte Albán polity. The location of San Joaquín may have been part of a strategy to establish a new center closer to Oaxaca that could facilitate the integration of the rest of the Ejutla region into the Monte Albán polity and serve as a conduit for goods made in Ejutla and beyond.

## Summary

The growth and expansion of Teotihuacan in central Mexico affected, directly and indirectly, regions near and far. In the Southern Highlands, the expansive Monte Albán polity of the Terminal Formative period (Monte Albán II) retreated from areas to the north, such as the Cañada de Cuicatlán, in response to increasing influence/control of those areas by the central Mexican metropolis. Rulers at Monte Albán, who retained diplomatic contacts with the central Mexican center (Marcus, 2009, pp. 97–98), adapted by shifting their political focus to their more immediate surrounds, the Valley of Oaxaca and areas to the south, such as the Ejutla Valley. At the same time, as they were more dependent on these local populations for their economic support, certain civic-ceremonial functions were decentralized and distributed to centers in other parts of the region, especially in the Valle Grande. During Monte Albán IIIA, the governing authorities at these outlying centers appear to have maintained close affiliations with the Monte Albán's rulers.

The changes that occurred during IIIA in the Valle Grande in turn opened up new networks and opportunities in the Ejutla region to the south. Most of the changes that occurred in Ejutla during Monte Albán IIIA seem directly related to the fuller incorporation of that area into Monte Albán's political and economic domain, likely including a network of market-places where exchanges took place. In the Ejutla region, there was a significant increase in population as new economic opportunities emerged with that greater connectivity. At the same time, there was a consequent expansion in the site hierarchy, including the establishment of a new large center in north-central Ejutla. The establishment of terrace sites in the Ejutla region that continued the ring of such hilltop sites along the southern edges of the Valley of Oaxaca further connected Ejutla to its larger, northern neighbor, possibly defining the limits of a Monte Albán–centered polity.

Like Teotihuacan's economic interest in the Amatzinac River valley, located immediately south of the Basin of Mexico, the full incorporation of Ejutla into Monte Albán's political sphere may have been economically motivated. The Ejutla Valley is located closer to the coast and may have been seen as a conduit for coastal or lowland products from farther south (e.g., White & Barber, 2012), including shell and cotton. It is possible that at least some cotton also was grown in Ejutla, which is lower in elevation than the Valley of Oaxaca.

The Valley of Oaxaca and immediate adjacent/contiguous smaller valleys, including Ejutla, were more politically unified

FIG. 7.40. Carved stone of human figure with crossed arms in houselot wall in Ejutla de Crespo.

during the Early/Middle Classic [IIIA and early IIIB–IV] than ever before. This increased political (as well as economic) connectivity fostered the growth of large secondary and tertiary centers, including a string of civic-ceremonial centers that extended south through southern Valle Grande into the Ejutla Valley. Yet even the largest of these centers were dwarfed by the monumental architecture at Monte Albán. The latter site also had a near monopoly on the carving/display of carved stones with glyphic texts until later in the Classic period (Marcus, 1989, 1992, 2006). Although, as suggested previously, certain governing and/or ritual activities were decentralized in Monte Albán IIIA, there is no question that highest-order political, commemorative, and religious activities were enacted at Monte Albán, as no other contemporaneous site in the Central Valleys of Oaxaca matched the diversity and scale of public buildings and monuments or the elaborateness of the tombs (Miller, 1995) found there.

During Monte Albán IIIA, one set of carved stones at Monte Albán focused on the capture and display of well-dressed lords in fancy attire who were taken captive. These stones may have commemorated the expansion/pacification of outlying areas of the Central Valleys of Oaxaca or the removal of local lords who resisted the directives of Monte Albán's rulers. Several carved stones, possibly dating to the Classic period (Marcus, 2002, pp. 115–119), were found out of their original context during the Ejutla survey (Figs. 7.40 and 7.41). These stones include elements, such as the depiction of a predatory jaguar, that possibly mark and glorify conquest (Marcus, 2002).

FIG. 7.41. Carved stone of jaguar (placed upside down), shown consuming a stylized human heart, in El Cerro.

Greater political integration in the Valleys of Oaxaca and Ejutla at this time was fostered by more economic connectivity and interdependence. This economic connectivity helped sustain the highest population levels in the region's history (to this point), exceeded later only during the Late Postclassic (Monte Albán V) and the last century and a half in our modern era. During the Early Classic (IIIA), in conjunction with increased nonagricultural production, there also were more communities that likely had to import food, particularly in dry years. Increased intraregional exchange also may have reduced the domestic risks associated with economic specialization (Feinman, 1999a). Greater economic interdependence enabled households in outlying areas to focus on locally available resources, such as xerophytic plants (especially maguey) in Tlacolula (Feinman & Nicholas, 2005), fostering more rapid growth in these areas than at the center of the valley. The significant demographic growth in the Ejutla Valley also was promoted by this greater economic interdependence, though not so much because of a direct focus on local resources as through interests in coastal and lowland goods, like cotton and shell, that were accessible through Ejutla. The nature of this relationship contrasts with the Valle Grande, which had a more agrarian-based link to Monte Albán, and these differences may help account for the rather distinctive settlement and architectural patterns that we see between these two adjacent subregions. Ejutla's role as an entry point for coastal products into the Valley of Oaxaca continued throughout the pre-Hispanic occupation of the region (to the present), although local settlement patterns and community hierarchies shifted in subsequent periods as Ejutla's position in the larger valley system underwent key changes.

# Chapter 8: Monte Albán's Zenith and Collapse: Monte Albán IIIB–IV

> The dynamic role played by local elites has tended to be underappreciated because many of the documents, texts, and excavation data pertain to capitals.
>
> (Marcus, 2006, pp. 245–246)

The period between AD 500 and AD 850 (Late Classic/Epiclassic) was marked by the apogee and then decline of great Classic period centers across highland Mesoamerica. Although Teotihuacan and Monte Albán retained sizable populations, their declines were characterized by decreasing populations, the loss of influence/control of areas beyond their immediate boundaries, and a reorganization of the regional systems of which they were a part (Hirth, 1989, p. 78; Blanton et al., 1993, pp. 91–99, 135; Smith, 2002, pp. 165–168). In both regions, reorganization was manifested by political and demographic fragmentation, as the larger expansive states broke up into smaller polities. Neither valley continued to be dominated by one large (primate) political center.

The smaller polities that resulted tended to be focused on prior secondary centers where local ruling authorities exercised newly found power in the political vacuum left by the decline of the earlier metropoles that had dominated their respective hinterlands both demographically and in terms of monumentality for centuries. In the Valley of Oaxaca, this shift is vividly reflected in changes in carved stone monuments. During the Early/Middle Classic (Monte Albán IIIA), when Monte Albán maintained hegemony over most of the Central Valleys of Oaxaca, the capital's ruling authorities held a near monopoly on written texts; depictions of rulers (though rare) are known almost exclusively from the capital (Marcus, 1983e). During the Late Classic/Epiclassic (Monte Albán IIIB–IV), a new kind of carved stone monument was erected not only at Monte Albán but also at almost a dozen other sites in the valley (Marcus, 1983f, 1992, 2006; Urcid et al., 1994; Urcid, 2003; Feinman, 2007). These carved stones traced and legitimized the descent of powerful individuals from their immediate forebears. In most cases, these individuals, who generally were named, also were depicted in marital pairs, thereby elaborating their affinal ties. In general, these stones were positioned so that they could be viewed only by small groups of people, who likely were exclusively of high status. These genealogical registers, most of which were relatively small in size, seem to have been erected by emerging leaders who were attempting to legitimize their right to rule, largely in front of small groups of their peers. By the end of the Classic period, the shifts in settlement pattern along with these changes in how and where those with power elected to present themselves provide an empirical basis to posit that political authority had (at least in part) been wrested from Monte Albán and was more broadly dispersed at centers across the region (Winter, 2001, p. 297; Marcus, 2006, pp. 221–232).

The effects of the decline of the early central Mexican and Valley of Oaxaca states were felt variously across the highlands. Near peripheries such as the Amatzinac River valley in eastern Morelos and the Ejutla Valley that were incorporated into these earlier polities, centered at Teotihuacan and Monte Albán, respectively, were very much affected (Fig. 8.1). Each region had been economically interconnected for centuries with their respective capitals; the Amatzinac Valley had provided agricultural produce (Hirth, 1978, p. 325,

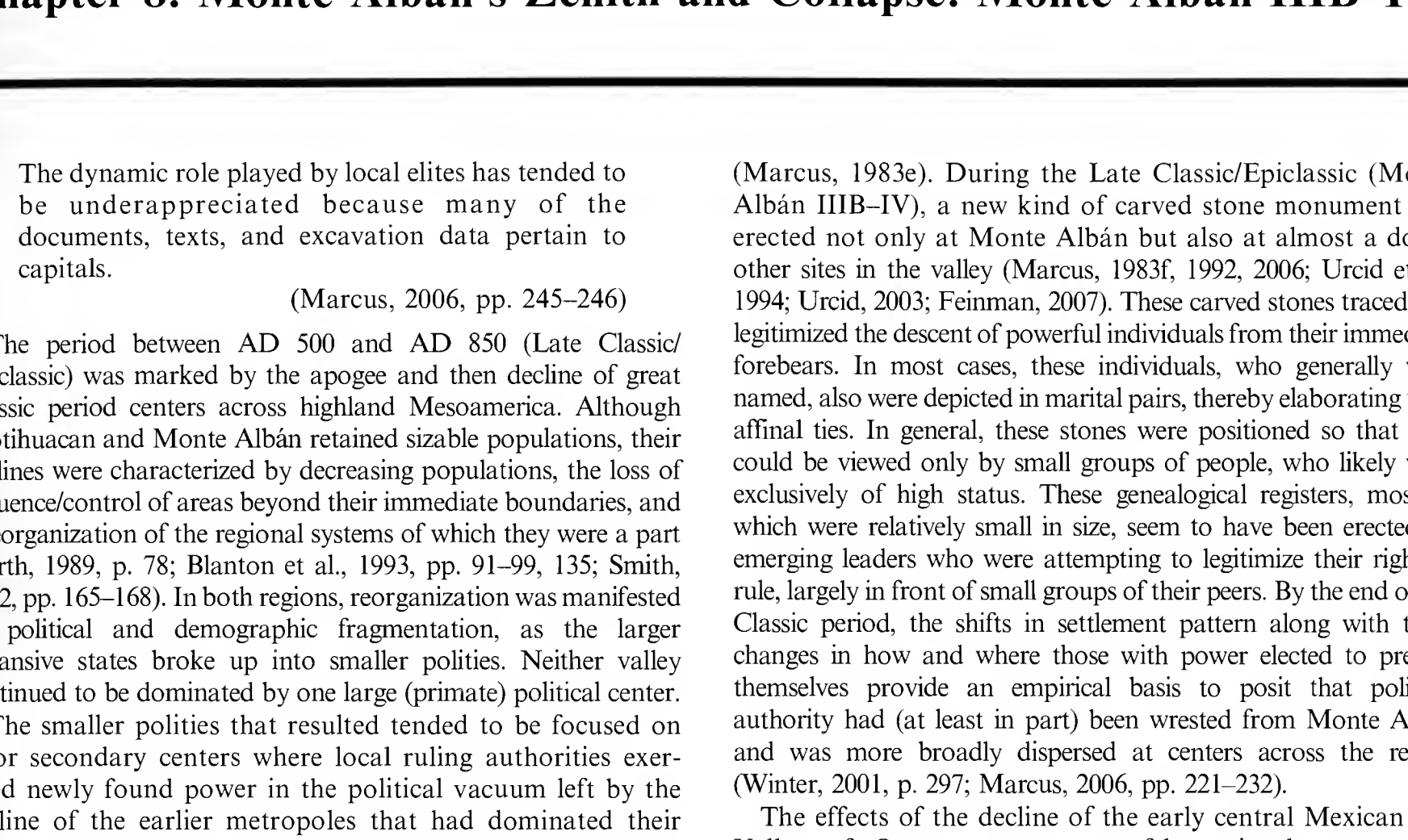



FIG. 8.1. Regions and sites in Oaxaca and central Mexico mentioned in the text.

95–99), and Ejutla had served as a conduit for goods [illegible]astal and lowland areas to the south (Feinman & Nicholas, 1990a, p. 234). During the later Classic period, both of these outlying valleys experienced population loss and/or the disruption of settlement distributions (Hirth, 1978, p. 328; Arana, 1987, p. 387; Feinman & Nicholas, 1990a, p. 238). No new large centers were immediately established in either valley. Areas of the Mixteca Alta were variously affected, with some subregions practically devoid of population at the end of the Classic period (Kowalewski et al., 2009, pp. 345–346).

At the same time, though, populations grew and new centers ultimately arose in other Mesoamerican regions that had not been as directly or intensively dominated by Teotihuacan or Monte Albán during the Classic period. Tula, in southern Hidalgo, 65 km northwest of the Basin of Mexico, grew rapidly and became the principal center on the Central Mexican Plateau after Teotihuacan began to decline in influence and power (Healan et al., 1989, pp. 242–243; Mastache et al., 2002, pp. 51–76). In western Morelos, which had never been as influenced or controlled by Teotihuacan (as eastern Morelos had), Xochicalco emerged as the dominant political and economic center of a large state that may have exerted degrees of control west into Guerrero (Hirth, 1984, p. 585, 1995). Elsewhere in western Mesoamerica, new centers arose, while others became more powerful, including El Tajín, Cacaxtla-Xochitecatl, and Cholula (Diehl & Berlo, 1989; Kowalski & Kristan-Graham, 2007). Whatever the root causes of the declining fortunes of large Classic period centers, this major episode of reorganization had consequences across all of Mesoamerica, including in the Maya area (e.g., Ringle et al., 1998; Golitko et al., 2012).

Although there is general agreement that Monte Albán began a slow decline by the end of the Late Classic period (e.g., Paddock, 1983c; Marcus & Flannery, 1990, p. 193; Feinman, 2007; Feinman & Nicholas, 2011a), the subregional changes that occurred in the Valley of Oaxaca during Monte Albán IIIB and IV have been debated for decades because of long-standing difficulties and problems associated with the Classic–Postclassic ceramic chronology for the Valley of Oaxaca (Kowalewski, 1983; Paddock, 1983c; Winter, 1989, 1997, 2003b; Marcus & Flannery, 1990; Lind, 1994a; Martínez et al., 2000; Markens, 2004, 2011; Feinman & Nicholas, 2011a). We address the decline of Monte Albán in this chapter and the next. In this chapter, our focus is explicitly on the Monte Albán IV settlement pattern for the Ejutla Valley and how it relates to Monte Albán IV sites in the Valley of Oaxaca. In Chapter 9, we take a longer temporal view of the Classic–Postclassic transition in the Central Valleys of Oaxaca, offering suggestions as to how we would now interpret settlement data from the Valleys of Oaxaca and Ejutla in the face of new findings from more recent excavations. We treat these issues in two different chapters in order to separate clearly the presentation of settlement findings from the Ejutla Valley from somewhat more derivative analyses that require additional assumptions in Chapter 9.

The regional surveys of the Valleys of Oaxaca and Ejutla picked up significant changes in settlement patterns during the Late Classic/Early Postclassic, and the principal patterns stand regardless of how one chooses to deal with the problem of distinguishing the Monte Albán IIIB and IV ceramic assemblages. For example, the population in southern Valle Grande was markedly reduced in both Monte Albán IIIB and IV from what it had been during IIIA. Larger settlements in southern Oaxaca were either isolated or situated in small clusters that were dispersed across sizable unoccupied areas. In addition, the distribution of population and mound centers in Monte Albán IIIA (Kowalewski et al., 1989, fig. 8.12) is very different from the proposed distributions in Monte Albán IIIB (Kowalewski et al., 1989, fig. 9.3) or Monte Albán IV (Kowalewski et al., 1989, fig. 9.15). The changes in the distribution of centers, especially in southern Valle Grande, compared to the rather continuous lattice of centers that was in place during Monte Albán IIIA, are dramatic (Kowalewski et al., 1989, p. 231). Southern Valle Grande does not appear to have been nearly as well integrated with the remainder of the Valley of Oaxaca following Monte Albán IIIA.

During the regional survey of the Ejutla Valley, we followed procedures that we had used during the Valley of Oaxaca surveys to ensure comparability in the information collected. At only one small site did we find ceramics that we could classify as definitively Monte Albán IIIB. At all other sites where we found IIIB–IV pottery on the surface, there were no clear IIIB diagnostics, and the overall assemblages were more like what we called Monte Albán IV during the regional surveys of the Valley of Oaxaca. In this regard, settlement patterns in Ejutla were very similar to those in southern Valle Grande, where there were almost no settlements with assemblages of pottery that bore the key characteristics of Monte Albán IIIB ceramics (Kowalewski et al., 1989, p. 251). Even so, we recorded much less Monte Albán IV settlement in Ejutla than IIIA settlement. The sparseness of settlement in northern Ejutla during this time span is another indication that the linkages between settlements in Ejutla and Oaxaca were less strong than they had been during IIIA.

Because of the lack of evidence for IIIB settlements, the overall IIIB–IV settlement pattern in Ejutla is most contemporaneous with Monte Albán IV in the Valle Grande and Tlacolula. We now suspect that there is a strong spatial as well as temporal aspect to the variation between the Monte Albán IIIB and IV ceramic complexes. Because of this complexity, we do not believe it is appropriate to simply combine these phases. Yet unraveling this issue requires longer treatment, which we undertake in the next chapter. Basically, we suspect that the pottery being used in areas distant from Monte Albán, such as Ejutla and eastern Tlacolula, began to look like the Monte Albán IV ceramics at a time when Monte Albán IIIB pottery was still being used at and near Monte Albán. Eventually, however, as time passed, pottery like Monte Albán IV was used across the Central Valleys of Oaxaca. Ejutla's physical relationship to Monte Albán also is more similar to southern Valle Grande and eastern Tlacolula than to Etla, so in earlier publications (e.g., Feinman & Nicholas, 1990a, 1992a), we based our comparisons of Ejutla and the Valley of Oaxaca during this era of reorganization on the Monte Albán IV settlement patterns in both regions. We continue that analytical tack in this chapter.

Although we found very little pottery that looks like Monte Albán IIIB ceramics from the central Valley of Oaxaca, we do not believe that Ejutla was completely (or almost completely) abandoned during Monte Albán IIIB. Rather, it is our view that we do not have sufficient ceramic resolution, based on the survey collections, to separate Monte Albán IIIB from IV (as noted above, this problem generally increases with distance from Monte Albán and the core area). Because Monte Albán IIIB and IV in the Valley of Oaxaca bracket the cessation of monumental construction at Monte Albán, it is not clear how the Monte Albán IIIB–IV settlement patterns in Ejutla relate explicitly to the sequence of events at Oaxaca's capital. Yet given the almost complete lack of good IIIB ceramic diagnostics in regions farther south, we strongly suspect that

demographic decline and decreasing connectivity with Monte Albán may have begun in southern Valle Grande and Ejutla prior to the collapse of the capital itself. This issue is treated with greater detail and depth in Chapter 9.

Up through Monte Albán IIIA, Ejutla had shared many similarities with Tlacolula, especially eastern Tlacolula. Both subregions were somewhat distant from Monte Albán and central Oaxaca, and this had been reflected in similar settlement patterns and population densities. But as the Monte Albán polity disintegrated at the end of the Classic period, the settlement patterns in these two subregions began to change in different ways. Tlacolula became the new demographic core of the valley at the same time that Ejutla (and neighboring southern Valle Grande) experienced steep drops in population. Population density in eastern Tlacolula was the highest of any subregion during Monte Albán IV, even though the Valley of Oaxaca as a whole lost population (Fig. 8.2). Most of the largest sites (10 of 18 sites with populations over 1,000) in the Valley of Oaxaca were located in Tlacolula during Monte Albán IV. The others were dispersed across the Central subarea, the Valle Grande, and Ocotlán. There were no large settlements in Ejutla, where population densities were almost an order of magnitude lower than in eastern Tlacolula.

With the decline of Monte Albán, the large core cluster in central Oaxaca broke up as settlement shifted to Tlacolula. In contrast to Monte Albán IIIA, when the large cluster centered on Monte Albán extended north into Etla and well south into the Valle Grande, the Monte Albán IV landscape consisted of as many as 14 much smaller settlement clusters, only a few of which included areas that had been part of the core cluster in the Early Classic. A much-reduced Monte Albán was at the center of a small cluster that did not extend beyond the central part of the valley. The largest and most densely occupied clusters in Monte Albán IV were in Tlacolula (Fig. 8.3). Although the Monte Albán IV settlement clusters do not conform exactly to the limits of the small Late Postclassic petty states in the valley (discussed further in Chapters 9 and 10), it is possible to see the beginning of their formation toward the end of the Late Classic.

Ejutla was only peripherally a part of this political-economic system. As Monte Albán began its slow decline

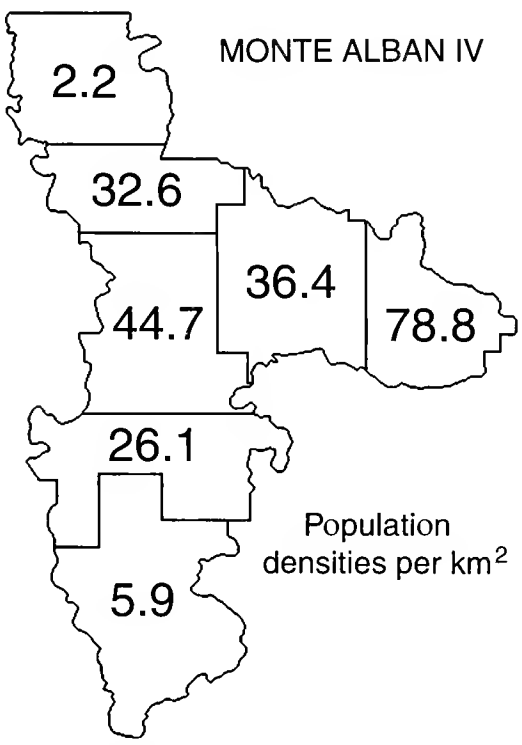



FIG. 8.2. Monte Albán IV population densities in Ejutla and Valley of Oaxaca subregions.

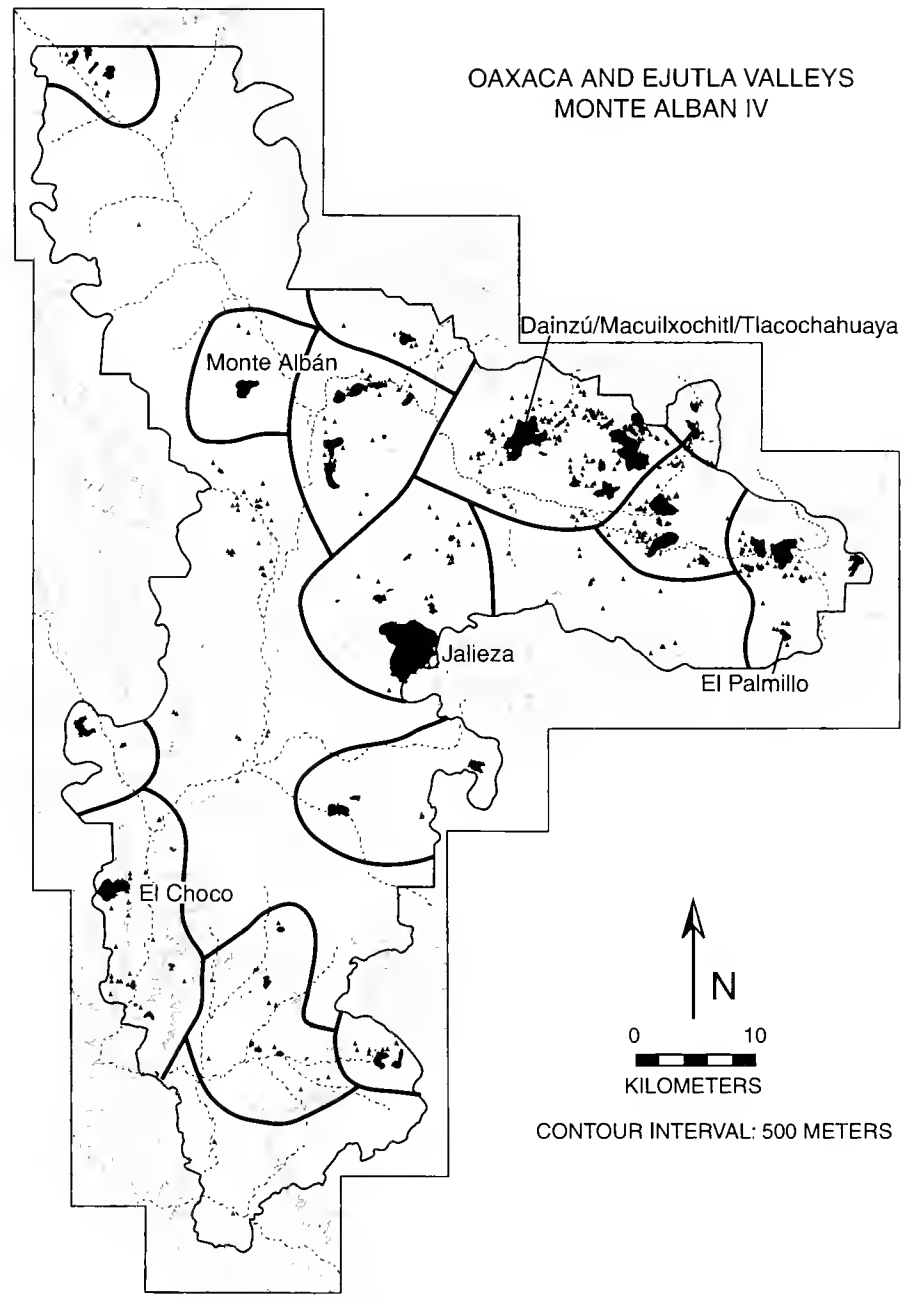



FIG. 8.3. Monte Albán IV settlement clusters in Ejutla and the Valley of Oaxaca.

and the focus of power and settlement shifted to Tlacolula, the largest centers in Ejutla were greatly reduced in size, likely at least in part because the sites' leaders lost at least some of their legitimating support from (and economic ties to) the political capital of the realm. At the same time, the shifting relations with Monte Albán also allowed Ejutla's elite families to begin to further develop their own ties with areas farther south. Never again (after Monte Albán IIIA) was Ejutla so closely integrated with its larger neighbor to the north.

As we have detailed to this point, the regional survey of the Ejutla region provided essential information to answer a range of questions about the nature of the relationship between a large core highland valley (the Valley of Oaxaca) and a smaller valley on its periphery (the Ejutla Valley). The survey also produced findings and questions that engendered excavations that we undertook in the early 1990s at the Ejutla site underneath the modern district capital. A significant finding of those excavations, among others, was that some Monte Albán IIIA–like ceramic diagnostics continued in use at the Ejutla site at the same time that IIIB ceramics were being made in other, more central parts of the Valley of Oaxaca (e.g., Feinman & Nicholas, 2001; see discussion in Chapter 9). Some IIIA ceramics also may have continued to be used in adjacent parts of southern Oaxaca, where few IIIB sites have been identified (Kowalewski et al., 1989, p. 252). Recent excavations in the Valley of Oaxaca, both directed by ourselves and by others (implemented in the years after the Ejutla survey),

are beginning to provide key information pertinent to the Classic-Postclassic transition in the Valley of Oaxaca.

In the sections to follow, we present our findings for the Ejutla Valley during Monte Albán IIIB–IV based on our recorded field data. Because most of the ceramics recovered at the one small site with IIIB pottery could be assigned only to IIIB-IV, we cannot rule out the contemporaneity of that site with all the other sites where we did define Monte Albán IV. Thus the Ejutla IIIB–IV site assemblage is most comparable to Monte Albán IV in the Valley of Oaxaca, and we largely draw comparisons with Monte Albán IV settlement patterns in Tlacolula and the Valle Grande. To make it clear that we are comparing the Ejutla site assemblage to Monte Albán IV (and not IIIB) in the Valley of Oaxaca, our focus in the remainder of this chapter is the corpus of settlements where Monte Albán IV pottery was identified.

In the chapter that follows (Chapter 9), we discuss in greater detail the chronological problems that have hampered our understanding of the specific changes that occurred in different parts of the Central Valleys of Oaxaca with the decline of Monte Albán at the end of the Late Classic period. Our own more recent excavations in eastern Tlacolula and a reconsideration of past excavations by others at a key sites in the Valley of Oaxaca, along with an expanded set of $^{14}C$ dates from Classic and Postclassic contexts in Oaxaca, provide new ceramic information that we drew on to review and reconsider the original survey data (from the Valley of Oaxaca and the Ejutla Valley). This analytical exercise resulted in a revised Classic–Postclassic population picture for the Valley of Oaxaca (and its geographic components) that corroborates and supports the basic interpretations advanced in this chapter while at the same time providing new perspectives on settlement change in the Central Valleys of Oaxaca that are consistent with findings and $^{14}C$ dates obtained from excavations.

## Monte Albán IV Settlement in Ejutla

Settlement changes in the Ejutla Valley between Monte Albán IIIA and IV were dramatic, similar to (but even greater than) contemporaneous settlement pattern shifts in adjacent southern Valle Grande. Population density decreased in both valleys, but the decline was much greater in Ejutla, where it fell to roughly 20% of what it had been in IIIA. Whereas population density in the Valley of Oaxaca had been twice that of the Ejutla Valley during Monte Albán IIIA, the difference was sixfold in Monte Albán IV (Table 8.1). Differences between the two areas in regional population size also were much greater in Monte Albán IV than in IIIA; sites in the Valley of Oaxaca, on average, were more than twice as large as those in the Ejutla region. Yet subregional differences within Oaxaca also were large so that Ejutla was not so different from select parts of the Valley of Oaxaca (Table 8.2). These subareal differences were much greater than they had been in IIIA (Table 7.2).

Most of the large IIIA centers in the Ejutla Valley, especially San Joaquín, declined markedly in size (and some were abandoned entirely), and no single Monte Albán IV settlement in Ejutla stood out from all the others in size or architectural elaboration. Rather, the Monte Albán IV population in the Ejutla Valley was distributed in three

TABLE 8.1. Population densities, component densities, and average site size in Ejutla and the Valley of Oaxaca in Monte Albán IV.

| | Oaxaca | Ejutla | Oaxaca without Jalieza, Monte Albán |
|---|---|---|---|
| Population densities/km$^2$ | 36.5 | 5.9 | 27.0 |
| Component densities*/100 km$^2$ | 14.9 | 8.7 | 14.8 |
| Average site area* (ha) | 9.3 | 3.4 | 7.1 |
| Average site population* | 245 | 67 | 182 |

* Combined sites.

settlement clusters that were spatially segregated (Fig. 8.4). The nearest-neighbor distances for mound centers within each Ejutla cluster range between 2 and 5 km, whereas all the centers in any one cluster are between 8 and 10 km away from the nearest center in a neighboring cluster. With their dispersed locations and the positioning of several of the larger Ejutla settlements on defendable hilltops, these settlement clusters likely were small, semiautonomous polities, similar to the small settlement clusters that emerged in the Valley of Oaxaca during and following the decline of Monte Albán (Kowalewski et al., 1989, p. 305; Marcus, 1989).

In the Ejutla Valley, the westernmost cluster, which extends along the Atoyac River north into the western edge of southern Valle Grande, possibly as far north as El Choco (Fig. 8.3), includes several sites that had been occupied in IIIA, including one of the tertiary centers from that prior phase, EJ-SML-SML-16 (in grid square S2E4 in Fig. 8.4), that continued to be the largest settlement in the area. The central cluster includes what remained of the large IIIA settlements at San Joaquín and the Ejutla site (each of which may have been at the center of two small subclusters). The eastern cluster is very different in that it consisted of several large, new settlements in an area that had almost no prior occupation; it also was much more spatially compact than the other two clusters. Still, in spite of variation in spatial extent, the total populations of each cluster were fairly equivalent. We consider possible organizational differences between these clusters after we examine architecture, the population and mound hierarchies, and ceramic distributions.

Most of the Monte Albán IV population was dispersed across a broad swath of central Ejutla, with the settlement clusters corresponding more closely to the physiographically defined subareas of Ejutla than in most other phases. A

TABLE 8.2. Number of sites, occupied area, and average site size for Ejutla and Valley of Oaxaca subregions in Monte Albán IV.

| | No. of sites* | Occupied area (ha) | Average site size (ha) |
|---|---|---|---|
| Etla | 10 | 40.4 | 4.0 |
| Central | 15 | 409.4 | 27.3 |
| Central without Monte Albán | 14 | 259.4 | 18.5 |
| Northern Valle Grande | 40 | 710.6 | 17.8 |
| Northern Valle Grande without Jalieza | 39 | 153.6 | 3.9 |
| Southern Valle Grande | 22 | 250.9 | 11.4 |
| Western Tlacolula | 128 | 607.3 | 4.7 |
| Eastern Tlacolula | 101 | 906.0 | 9.0 |
| Ejutla | 45 | 153.9 | 3.4 |

* Combined sites.

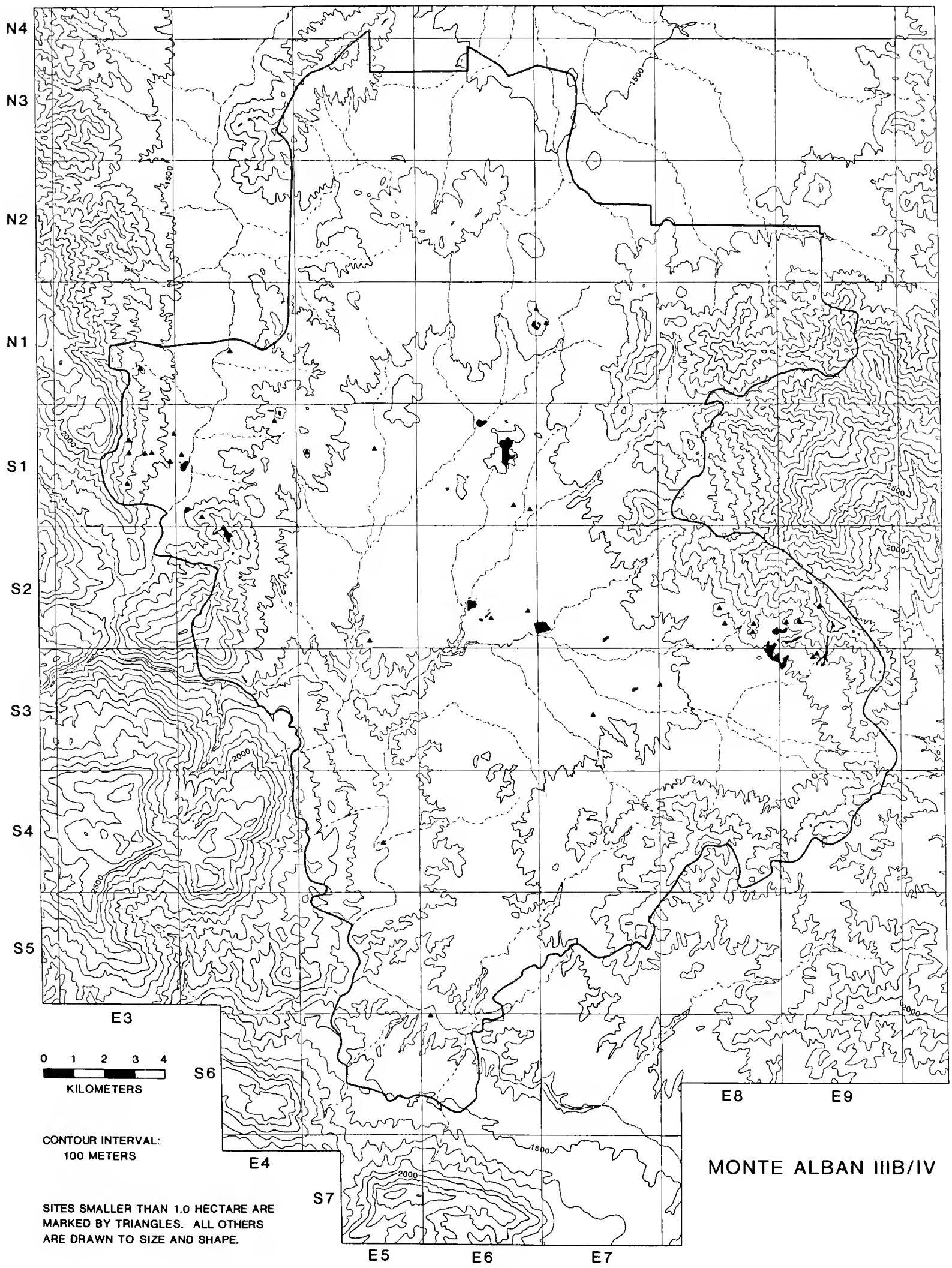



FIG. 8.4. Monte Albán IV settlements in the Ejutla Valley.

greater percentage of the Ejutla regional population (23%) was situated in the western subarea than in any phase since the Middle Formative, potentially pointing to stronger connections with western Valle Grande than had existed during IIIA, when the route through southern Ocotlán was more important. The eastern subarea, which previously never had more than 4% of the population, accounted for over 30% of the IV population. With the breakup of the IIIA settlement core around San Joaquín, population in both the central and the north-central subareas was considerably lower, but still about

[illegible] of the Monte Albán IV Ejutla population resided in those two subareas.

There appears to have been no effort to defend the southern or northern borders of Ejutla, as most of the small IIIA centers in those areas lost most or all their populations. Southern Ejutla was even more sparsely inhabited than it had been during IIIA, with only two small settlements remaining where there had been larger IIIA sites; one on the Atoyac River, the other on the Miahuatlán River near its juncture with the Atoyac. This largely empty area continued to separate Ejutla from Miahuatlán to the south.

In contrast to the significant population declines in southern Valle Grande and Ejutla following the Early Classic, neither Sola nor Miahuatlán appears to have suffered similar population loss. Populations remained stable in the Sola Valley during Monte Albán IIIB–IV, although there were settlement disruptions and relocations (Balkansky, 2002, pp. 57, 60). In the Miahuatlán Valley, Markman (1981) recorded more IIIB–IV sites in the region than in IIIA, especially in piedmont and mountain settings. There still was very little settlement in northern Miahuatlán so that the area of low population between Ejutla and Miahuatlán expanded. This area of low population may not have been a contested area, though, as there are no defensive sites along the southern border of Ejutla. In several ways, the changes that occurred in Sola and Miahuatlán at the end of the Classic period are more similar to what occurred in Tlacolula during that time span; these areas (Miahuatlán and Sola) may never have been as strongly tied in to the Monte Albán political system as the Valle Grande and Ejutla had been in IIIA. Less drastically affected by the loss of interaction channels with the earlier capital, they largely retained earlier population levels, with people instead relocating and/or reorganizing in response to the power vacuum that was created by Monte Albán's decline.

## Monte Albán IV Terrace Sites

Although populations declined in both valleys and there were fewer terrace sites overall, these hilltop settlements formed a larger percentage of total sites (12%) than during IIIA (7%) and housed significant proportions of the population in both the Valley of Oaxaca (63%) and Ejutla (50%). For the Ejutla Valley, this proportion was much higher that it had been during IIIA, when only 15% of the population resided in terrace sites.

We recorded Monte Albán IV ceramics on terraces at six sites in Ejutla (Table 8.3). Most of these sites are among the largest settlements in the region. Although most of them rank in the lower levels of the Valley of Oaxaca mound and population hierarchies, with the decline of San Joaquín, they became the principal mound and population centers of the Ejutla Valley. The Monte Albán IV terrace sites in the Ejutla region appear to have had higher-ranking civic-ceremonial functions than hilltop settlements had in IIIA, but they also were still concerned with defense. These sites were important political centers of the small but largely autonomous political systems (or petty states) of Monte Albán IV.

Only one Monte Albán IV terrace site in Ejutla had significant prior occupation. EJ-SML-SML-16 (IV-45; Appendix IX, Fig. 38; see also Fig. 7.13) was one of the largest

TABLE 8.3. Monte Albán IV terrace sites in the Ejutla Valley survey region.

| Site no. | Field site no. | Population | Terraces | Average length (m) | Average width (m) | Average area ($m^2$) | No. with items | % with items | Role | Defensive wall | Defendable location | Mound hierarchy | Population hierarchy | Other phases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10-45 | EJ-SML-SML-16 | 371 | 48 | 17.3 | 4.4 | 85.3 | 0 | 0.0 | defense | yes | yes | — | V | IIIA, V |
| 10-25 | EJ-CA-CA-1 | 338 | 40 | 18.2 | 5.2 | 95.5 | 11 | 27.5 | defense | yes | yes | — | V | IIIA, V |
| 10-23 | EJ-CA-CA-1 | 529 | 34 | 17.9 | 10.6 | 243.4 | 4 | 11.8 | defense | ? | yes | V | IV | V |
| 10-3 | EJ-EJ-EV-2 | 187 | 7 | 46.0 | 13.6 | 658.1 | 3 | 42.9 | production/defense | yes | yes | V | VI | V |
| 10-40 | EJ-SML-SML-14 | 52 | 5 | 15.3 | 5.0 | 75.0 | 0 | 0.0 | production? | no | no | — | — | — |
| 10-43 | EJ-SML-SML-22 | 52 | 5 | 11.6 | 6.9 | 83.7 | 0 | 0.0 | defense | ? | yes | V | — | — |

terrace sites in Ejutla in IIIA, and even though it decreased in size in Monte Albán IV, it continued to be one of the largest terrace sites in the region. That site and two small terrace sites are situated in western Ejutla, on the eroded piedmont ridge that divides the central Ejutla drainage from the Atoyac River. The other two were occupied only during Monte Albán IV. One of those sites, EJ-SML-SML-14 (IV-40; Appendix IX, Fig. 37), consists of five small terraces on a low north-facing slope at the base of the higher ridge where EJ-SML-SML-16 is situated. The other site, EJ-SML-SML-22 (IV-43; Appendix IX, Fig. 40), also consists of five terraces dispersed around two small mound clusters (see discussion below on public architecture). These two smaller sites were not as defensibly located as other terrace sites in Monte Albán IV.

The other three terrace sites were much larger in the subsequent phase (Monte Albán V), so we discuss them in greater detail in Chapter 10. But all three did have significant occupations beginning in Monte Albán IV. Half of the terraces at EJ-EJ-EV-2 (IV-3; Appendix IX, Fig. 9) were initially occupied in Monte Albán IV. The terraces at this hilltop site at the northern edge of the Ejutla Valley were spatially discrete from the monumental architectural grouping at the top of the hill (see discussion of public architecture below). The Monte Albán IV terraces at the site were very large, and there are indications of celt manufacture on some of the terraces. Yet because all of the terraces also had Monte Albán V ceramics, we cannot clearly attribute this craft activity to Monte Albán IV. Although there was an earlier Monte Albán IIIA occupation elsewhere on site, there were no IIIA ceramics on any of the terraces.

The other two terrace sites are separate components of what became a much larger site in Monte Albán V. EJ-CA-CA-1 (IV-23 and IV-25; Appendix IX, Fig. 1) is spread across several high piedmont ridges at the eastern edge of the Ejutla Valley. One of the components, IV-25, encompasses a plaza and three terraces at the highest point of the ridge that were initially constructed in Monte Albán IIIA (Fig. 7.15). This component consisted of 40 terraces. The other component, IV-23, had fewer terraces but more nonterrace occupation on lower slopes of the ridge system.

The total number of terrace sites in the Valley of Oaxaca also decreased by almost half at the end of the Classic period; still, over 50% of the valley's inhabitants continued to live in the hilltop sites (Table 8.4). While Monte Albán's hilltop presence was reduced, other terrace sites in the valley continued as large population centers. Jalieza, in northern Valle Grande, expanded to over 1,100 terraces and was one of the largest Monte Albán IV terrace sites in the entire region. It also was the principal population center in the valley, with over 16,000 inhabitants (Kowalewski et al., 1989, p. 287). In Tlacolula, as many as 1,200 terraces at El Palmillo were occupied during Monte Albán IV (Feinman & Nicholas, 2004a, p. 100); given the small size of many of the terraces as that site, however, its population was not as large as Jalieza's. Several other large IIIA terrace sites in the southern arm of the valley also were occupied in Monte Albán IV, but the largest concentration continued to be in Tlacolula. Half of the Monte Albán IV terrace sites in the Valley of Oaxaca were situated in Tlacolula (during IIIA, there had been almost as many terrace sites in the Valle Grande/Ocotlán as in Tlacolula). In contrast to Ejutla, where only one Monte Albán IV terrace site had significant earlier settlement, many of the terrace sites in Tlacolula had been occupied in IIIA. The greater discontinuity

TABLE 8.4. Monte Albán IV terrace sites in the Valley of Oaxaca.*

| Subarea | Field site no. | Phase no. | Population | No. of terraces | Average terrace area ($m^2$) |
|---|---|---|---|---|---|
| Etla | ET-SS-SS-1 | 1-10-14 | 43 | ? | — |
| Central | Loma de la Montura | 2-10-2 | 1,929 | 133 | 344.3 |
| Central | Monte Albán | 0-10-1 | 4,062 | 2,006 | 527.5 |
| Central | CE-TLX-TLX-11 | 4-10-6 | 1,008 | 11 | — |
| Ocotlán | OC-STJ-STJ-1,4,5 (Jalieza) | 3-10-46 | 16,177 | 1,158 | 205.7 |
| Ocotlán | OC-SJT-PG-1 | 5-10-5 | 522 | 33 | 558.9 |
| Ocotlán | OC-STJ-SPG-8 | 3-10-43 | 216 | 15 | — |
| Ocotlán | OC-TIL-TIL-1 | 5-10-1 | 891 | 53 | 304.6 |
| Tlacolula | OC-STJ-SCJ-4 | 4-10-42 | 1,298 | ? | — |
| Tlacolula | TL-MAT-MAT-81 (El Palmillo) | 4-10-291 | 5,000 | 1,243 | 43.6 |
| Tlacolula | TL-MIT-MIT-2 (Mitla Fortress) | 4-10-250 | 1,500 | 302 | 49.1 |
| Tlacolula | TL-SAV-SAV-9 | 4-10-124 | 495 | 37 | 497.6 |
| Tlacolula | TL-SJT-SJT-50 | 4-10-39 | 158 | 21 | 116.4 |
| Tlacolula | TL-SJT-SJT-6 | 4-10-32 | 158 | 10 | 635.5 |
| Tlacolula | TL-SLA-SLA-2 (Guirún) | 4-10-276 | 2,900 | 325 | 107.3 |
| Tlacolula | TL-SLQ-SLQ-8 (Quiavini) | 4-10-225 | 38 | 8 | 269.3 |
| Tlacolula | TL-TCH-TCH-50 (Tlacochahuaya) | 4-10-65 | 6,222 | 7 | 135.1 |
| Tlacolula | TL-TEO-TEO-5 | 4-10-120 | 381 | 27 | 188.6 |
| Tlacolula | TL-TEO-TEO-7 | 4-10-131 | 150 | ? | — |
| Tlacolula | TL-TEO-TEO-8 | 4-10-115 | 390 | ? | — |
| Tlacolula | TL-TEO-TEO-61 | 4-10-195 | 165 | ? | — |
| Tlacolula | TL-VDO-SMV-5 | 4-10-232 | 1,091 | ? | — |
| Valle Grande | CE-SMC-SMC-5 (Animas Trujano) | 3-10-7 | 1,121 | 28 | 216.5 |
| Valle Grande | ZI-SAT-SAT-8 | 3-10-79 | 53 | ? | — |
| Valle Grande | ZI-SMA-SMA-40 | 3-10-93 | 18 | 3 | — |
| Valle Grande | ZI-SBM-SCM-21,22 (Mixtepec) | 3-10-67 | 1,501 | 170 | 191.6 |
| Valle Grande | ZI-SMA-SMA-5,41 (El Choco) | 3-10-83 | 4,047 | 436 | 237.5 |

* Data summarized from Oaxaca survey publications (Blanton et al., 1982, apps. I and X; Kowalewski et al., 1989, apps. I and VII; Feinman & Nicholas, 2004a, apps. 4.A, 5.A, and 6.A).

Ejutla Valley shows significant disruption in settlement ... there coincident with Monte Albán's decline and loss of influence/control/interaction with outlying areas.

## Public Architecture

Monte Albán IV ceramics were observed on at least one mound at 16 sites in the Ejutla Valley (Table 8.5), down from 30 sites for IIIA. The decrease in total mound volume between the two periods was even greater, down to 66,931 $m^3$, one-third of the total volume in IIIA. Eleven of these sites have at least two mounds over 1 m tall and are described below. No settlement had more than seven mounds, and all of the sites with mounds fit into the two lowest tiers of the Valley of Oaxaca mound hierarchy (Table 8.6). The overall decline of public architecture in Ejutla matches the loss of population from IIIA (14,656) to Monte Albán IV (3,029).

Population decline in Ejutla during Monte Albán IV was accompanied by a significant shift in the distribution of sites and, especially, sites with civic-ceremonial architecture. Several new mound centers were established at the same time that large IIIA sites were abandoned or lost most of their prior population. No one site dominated the landscape, as was the case in Monte Albán II and IIIA. The six largest sites had between five to seven mounds. While some of the structures were dispersed at several of the sites, all comprised at least one formal mound group associated with plazas and/or platforms. Not included here is the Ejutla site. Although we recorded Monte Albán IV ceramics in some sectors of the site, we did not observe IV ceramics on any of the structures. Our excavation findings, discussed in Chapter 9, support the inference from the earlier survey that this settlement continued to be inhabited into Monte Albán IIIB–IV.

Three sites in the Ejutla Valley with five or more mounds (over 1 m tall) were occupied only during Monte Albán IV. They are among the largest mound centers (in number of mounds, not population) at that time, which affords us a good picture of what Monte Albán IV mound centers looked like. Although they differ from each other in significant ways, each has at least one compact mound group. EJ-LC-LC-8 (IV-47; Appendix IX, Fig. 26) consists of a linear arrangement of structures situated on top of a long narrow ridge in western Ejutla that descends to the Atoyac River (in grid square S3E4 in Fig. 8.5). The architecture consists of six structures, including a small ballcourt, several defensive walls, and an enclosed plaza. The site is bordered on one side by a long wall and on the other by a steeply descending slope. Entrance into the center of the mound group is guarded by one structure at each end of the mound complex. Access to the ballcourt, located at the center of the group, and the adjacent plaza was extremely limited. This site did not have a large population. It is the most defensibly located of the three and from its vantage may have monitored traffic entering the region from the north.

The architecture at EJ-SML-SML-12 (IV-39; Appendix IX, Fig. 36) consists of a very compact group of three abutting platforms and three mounds constructed in the low piedmont on the west side of the Atoyac River in western Ejutla. At the center of the architectural complex is a large platform (Platform 2). In the southwestern corner of the platform is another, smaller platform on which one of the mounds was placed. A small mound on the southern side of Platform 2 abuts this

TABLE 8.5. Monte Albán IV sites in the Ejutla Valley survey region with populations over 50, mounds, terraces, defensive walls, and/or ceramic collections.

| Site | Name | Grid square | Population | Mounds <1 m | Mounds ≥1 m | Volume ($m^3$) | Terraces | Defensive walls | Ceramic types |
|---|---|---|---|---|---|---|---|---|---|
| 1 | EJ-EJ-EV-13 | N1E7 | 15 | 0 | 0 | 0 | 2 | 0 | 3 |
| 3 | EJ-EJ-EV-2 (El Vergel) | N1E7 | 187 | 2 | 6 | 2,460 | 7 | 2 | 4 |
| 4 | EJ-LP-LP-6 | S1E5 | 10 | 0 | 0 | 0 | 0 | 2 | — |
| 5 | EJ-LP-LP-5 | S1E5 | 8 | 0 | 0 | 0 | 0 | 0 | 2 |
| 6 | EJ-EJ-SJ-6 | S1E6 | 45 | 0 | 0 | 0 | 0 | 0 | 2 |
| 7 | EJ-EJ-SJ-6 (San Joaquín) | S1E6 | 462 | 2 | 6 | 2,967 | 0 | 0 | 10 |
| 8 | EJ-LP-LG-1 | S1E6 | 19 | 0 | 2 | 1,196 | 0 | 0 | 3 |
| 9 | EJ-EJ-SJ-2 | S1E6 | 8 | 2 | 0 | 89 | 0 | 0 | 7 |
| 10 | EJ-TAN-TAN-2 (Taniche) | S2E6 | 148 | 0 | 2 | 5,701 | 0 | 0 | 4 |
| 11 | EJ-TAN-TAN-3 | S2E6 | 54 | 0 | 0 | 0 | 0 | 0 | — |
| 13 | EJ-TAN-TAN-1 | S2E7 | 288 | 0 | 0 | 0 | 0 | 0 | 6 |
| 14 | EJ-TAN-TAN-1 | S2E6 | 16 | 0 | 0 | 0 | 0 | 0 | 3 |
| 15 | EJ-EJ-EJ-1 (Ejutla) | S2E7 | 48 | 0 | 0 | 0 | 0 | 0 | 4 |
| 16 | EJ-EJ-EC-4 | S2E8 | 9 | 0 | 0 | 0 | 0 | 0 | 2 |
| 23 | EJ-CA-CA-1 (Coatecas) | S3E8 | 529 | 1 | 7 | 11,136 | 34 | 0 | 5 |
| 25 | EJ-CA-CA-1 | S3E9 | 338 | 1 | 0 | 85 | 39 | 1 | 3 |
| 26 | EJ-CA-CA-1 | S2E9 | 8 | 0 | 2 | 1,743 | 0 | 0 | — |
| 29 | EJ-EJ-SJ-1 | S1E6 | 15 | 0 | 1 | 412 | 0 | 0 | 4 |
| 32 | EJ-SML-SML-3 | S1E3 | 8 | 0 | 0 | 0 | 0 | 0 | 2 |
| 39 | EJ-SML-SML-12 | S1E4 | 118 | 0 | 6 | 8,776 | 0 | 0 | 2 |
| 40 | EJ-SML-SML-14 | S1E4 | 52 | 0 | 0 | 0 | 5 | 0 | — |
| 42 | EJ-EJ-SCN-18 | N1E4 | 16 | 0 | 0 | 0 | 0 | 0 | 3 |
| 43 | EJ-SML-SML-22 | S1E4 | 52 | 2 | 5 | 914 | 5 | 0 | — |
| 45 | EJ-SML-SML-16 | S2E4 | 371 | 0 | 0 | 0 | 48 | 4 | 4 |
| 46 | EJ-LC-RE-1 | S2E5 | 15 | 0 | 1 | 139 | 0 | 0 | 4 |
| 47 | EJ-LC-LC-8 | S3E4 | 20 | 1 | 6 | 4,128 | 0 | 2 | 6 |
| 48 | EJ-EJ-EJ-42 | S3E7 | 10 | 0 | 1 | 15,155 | 0 | 0 | 4 |
| 51 | EJ-SAA-SAA-15 (Amatengo) | S4E5 | 8 | 0 | 3 | 7,763 | 0 | 2 | 2 |
| 52 | EJ-YO-YO-12 (Yogana) | S6E6 | 8 | 0 | 2 | 4,267 | 1 | 0 | 4 |

TABLE 8.6. Monte Albán IV mound hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| **Level** | **Mounds** | **No. of sites** | **Mounds** | **No. of sites** |
| I | >50 | 2 | — | — |
| II | 33–37 | 2 | — | — |
| III | 12–18 | 4 | — | — |
| IV | 8–10 | 7 | — | — |
| V | 4–7 | 12 | 5–7 | 6 |
| VI | 2–3 | 18 | 2–3 | 5 |
| No rank | 0–1 | 271 | 0–1 | 34 |

platform and structure. The third platform and one structure abut the eastern edge of Platform 2. In contrast to EJ-LC-LC-8, the architectural complex at EJ-SML-SML-12 was more open.

The mound and plaza group at EJ-SML-SML-22 (IV-43; Appendix IX, Fig. 40) was smaller and less formal. There are two small structures on two sides of a small plaza; a small structure was constructed in the middle of the plaza. Two other mounds at the site are situated a short distance away down a low ridge.

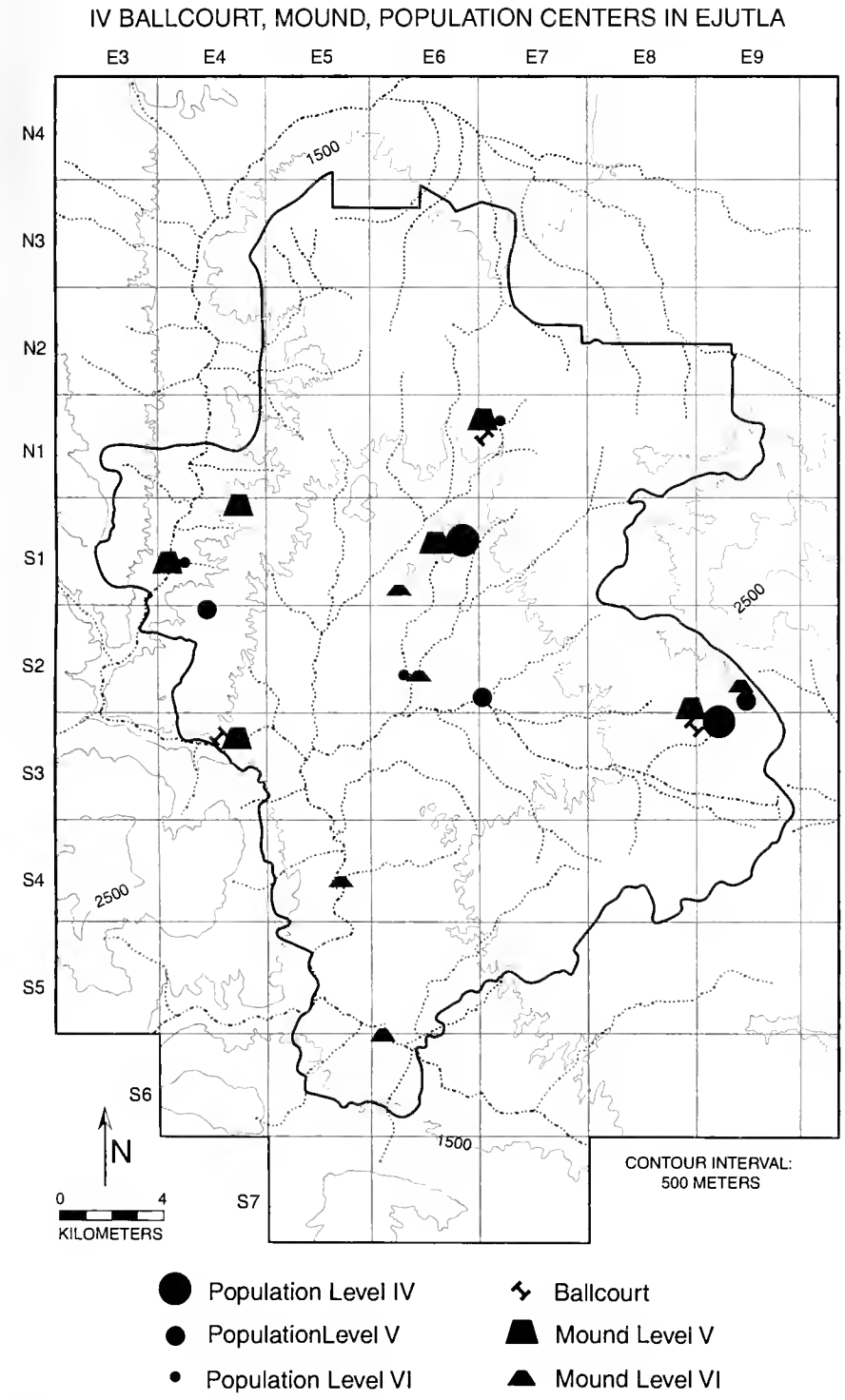



FIG. 8.5. Monte Albán IV ballcourts, mound and population centers in Ejutla.

The other three sites with five or more mounds are multicomponent sites, but at all three we have some indication of what the Monte Albán IV architecture looked like. Two were occupied initially in Monte Albán IV, and although both were larger in Monte Albán V, some mounds at each site appear to have been constructed initially in IV. Each of these two sites contains a compact architectural complex that includes a small ballcourt. At Coatecas (IV-23; Appendix IX, Fig. 1a), the ballcourt was placed on the edge of a large platform that is defined on the opposite edge by a high wall (Fig. 8.6). This isolated complex is situated near the base of a series of mountain ridges in eastern Ejutla; several other platforms are dispersed across nearby ridges. The ballcourt at the other site, EJ-EJ-EV-2 (IV-2/3; Appendix IX, Fig. 9), on a low hilltop in northern Ejutla, defines the eastern edge of a very closed plaza that is surrounded by structures on the other three sides.

The final site in this group is San Joaquín (IV-7; Appendix IX, Fig. 20c), which was much larger in IIIA, when all mounds at the site appear to have been constructed. The Monte Albán IV component consists of the continued use of only eight structures, all but one of which are part of the site's northeastern mound complex. Most of mounds associated with Monte Albán IV ceramics are small and do not form formal architectural groupings. The largest architectural complex at San Joaquín, constructed on a ridgetop to the west, did not continue in use in Monte Albán IV. Based on these findings, we suspect that the depopulation of San Joaquín was, as with Monte Albán, a prolonged process (see Chapter 9).

The remaining five sites are multiple component sites where we recorded Monte Albán IV ceramics on only two or three mounds. The architecture at most of these sites was constructed during or before Monte Albán IIIA. At several sites, there were other structures, often nearby, that do not appear to have been used/occupied in Monte Albán IV. Most have small populations, and it is not clear how important a role, if any, they played in the regional settlement system. But one thing several of these reoccupied complexes have in common with architecture that we can more securely date to Monte Albán IV is some degree of limited access.

At Yogana (IV-52; Appendix IX, Fig. 43; see also Fig. 5.16), only one large platform and the mound on the northwestern corner of the platform were used in Monte Albán IV; the

FIG. 8.6. Small ballcourt on lower slopes of Coatecas (EJ-CA-CA-1).

ern end of the platform was partially enclosed by a low . The rest of the platform was open. The Monte Albán IV component at Amatengo (IV-51; Appendix IX, Fig. 33; see also Fig. 5.17) also consists of the largest platform at the site; two structures and several walls on top of the platform enclose a plaza with very limited access. An isolated two-mound group at the western edge of San Joaquín (IV-8) continued in use in Monte Albán IV. This component is below the ridge where the western architectural complex of San Joaquín (the EJ-LP-LG-1 part of the site) was constructed and on the opposite edge of the large earlier site from the other Monte Albán component at the site (IV-7).

The architecture at Taniche (IV-10; Appendix IX, Fig. 41) consists of only two mounds, both of which were occupied in Monte Albán IIIA and IV. Although situated close to each other, they are not associated with any clearly defined plaza. At only one of these five sites does mound construction appear to have occurred in Monte Albán IV. A small platform and adjacent mound are situated on top of a high ridge at the eastern edge of Coatecas (IV-26), over 2 km from the ballcourt complex on the lower slopes of the site (component IV-23). These structures continued to be used during Monte Albán V when the site expanded to include all the slopes down to the earlier ballcourt.

In sum, most of the larger Monte Albán IV mound centers in Ejutla were newly established on or near the edges of the settled area, and the architecture at these sites was characterized by small complexes of formal and often closed architectural groups. Small ballcourts were part of these constructions at three sites (Fig. 8.5). Each site with a ballcourt is located in a different settlement cluster, and all three are situated near the edges (west, north, and east) of the Monte Albán IV occupation of the Ejutla Valley. The location of ballcourts in Ejutla at that time conforms to their distribution in the Valley of Oaxaca, where most were built in defensible settings near regional boundaries (Kowalewski et al., 1991; Feinman & Nicholas, 2011b).

The Mesoamerican ballgame has long been linked to political or factional rivalry, competitions for power, and the accession of rule (Gillespie, 1991; Santley et al., 1991; Fox, 1996; Montmollin, 1997), with ballcourts serving as "strategic settings for the negotiation of power relations" (Fox, 1996, p. 483). With the breakup of the Monte Albán political system as the Classic period drew to a close, local elites may have invested in these architectural complexes, including the construction of ballcourts, in an attempt to assert their own authority and to control their immediate territories. In subsequent excavations that we carried out at El Palmillo, in eastern Tlacolula, during the early 2000s, we documented the construction of a small ballcourt between two existing palaces during late IIIB–IV, coincident with the episode of fragmenting power in the Valley of Oaxaca that occurred with the decline of Monte Albán (Feinman & Nicholas, 2009, 2011b). The construction of a small ballcourt adjacent to two palaces late in the occupation of El Palmillo was an effort by emerging local lords to legitimize their right to rule. The Monte Albán IV ballcourts in Ejutla appear to have been constructed under similar circumstances. More specifically, we suspect that the large platform adjacent to the ballcourt at Coatecas (IV-23; Appendix IX, Fig. 1a) may be the setting for a palace, paralleling the architectural layout noted at El Palmillo as well as at other large centers occupied at this time in the Central Valleys of Oaxaca (Feinman & Nicholas, 2011b).

## Hierarchy

The mound hierarchy in Ejutla collapsed to just two levels during Monte Albán IV (Table 8.6). This rather flat hierarchical organization contrasts sharply with Oaxaca, where there continued to be as many as six levels (Kowalewski et al., 1989, table 9.9), although one could argue for only four or five functional levels based on the low number of sites in the upper tiers and their distribution on the landscape (Fig. 8.7). The two Ejutla levels conform to the two lowest levels in Oaxaca, similar to what we saw for Late I, prior to Monte Albán's increased interest in Ejutla during Monte Albán II and IIIA. When Monte Albán began to incorporate the Ejutla Valley more fully into its political and economic sphere, the depth of the mound hierarchy increased; monumental constructions were much larger at one or two settlements that dominated the Ejutla Valley. During Monte Albán IV, however, no one site was clearly dominant in terms of the amount or volume of mounded architecture, reflecting declining influence/control by the earlier, powerful capital.

There also was an accompanying decrease in the population hierarchy in Ejutla, to four levels at most, compared to seven in Oaxaca (Table 8.7), although again, with few sites in the top three levels, the significance of the size differences at the top may be exaggerated. The dispersion of population centers across the region repeats the same pattern as the mound

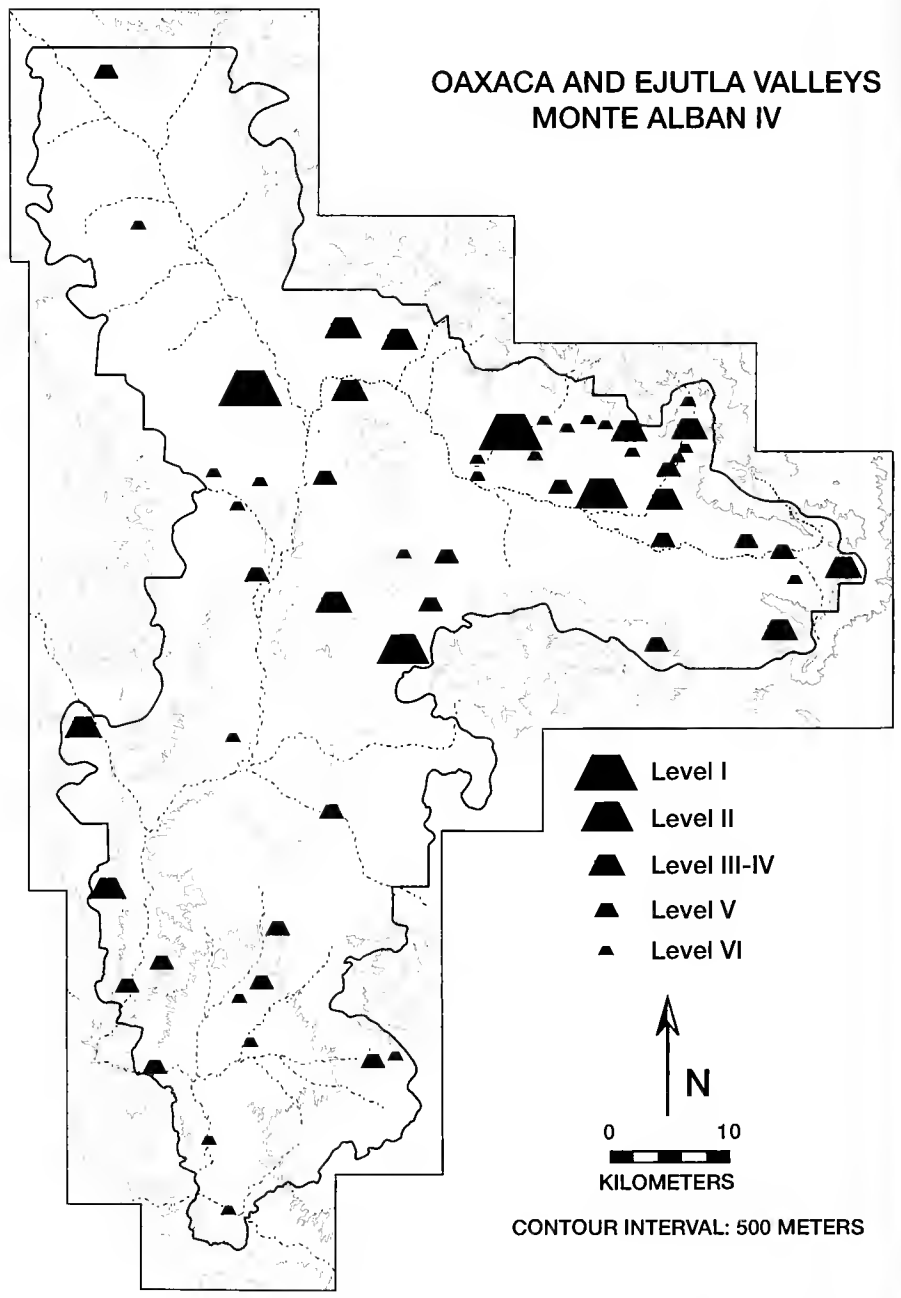



FIG. 8.7. Monte Albán IV mound centers in Ejutla and the Valley of Oaxaca.

TABLE 8.7. Monte Albán IV population hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| **Level** | **Population** | **No. of sites** | **Population** | **No. of sites** |
| I | 16,117 | 1 | — | — |
| II | 5,000–6,222 | 2 | — | — |
| III | 3,590–4,062 | 3 | — | — |
| IV | 486–2,900 | 22 | 462–529 | 2 |
| V | 269–405 | 7 | 288–371 | 3 |
| VI | 102–198 | 19 | 118–187 | 3 |
| No rank | 8–95 | 262 | 8–54 | 37 |

centers, with most of the largest settlements located in or near the Tlacolula arm of the valley (Fig. 8.8). The four Ejutla levels conform to the bottom four in Oaxaca. Yet even the largest settlement in Ejutla, Coatecas (IV-23; with 529 people), would have been one of the smallest Rank IV centers in the Valley of Oaxaca. This relatively flat population hierarchy also is very similar to the Late I pattern in Ejutla despite the slightly larger size of the Monte Albán IV settlements (Fig. 8.9; compare to Fig. 5.18).

The six Rank V mound sites (the largest in Ejutla) and the largest population centers were dispersed across the region, except for southern Ejutla, which was largely devoid of Monte Albán IV settlement. Five of the mound centers (and several of the population centers) were established in locations with very little or no prior IIIA occupation. As Monte Albán was declining and losing control/influence of peripheral areas like the Ejutla Valley, elites at large centers, such as San Joaquín, who had earlier prospered in part through their connections to Monte Albán may have seen their power wane. In this vacuum, local elites gained newly found freedom/impetus to move to new locations and construct their own monumental architecture, including ballcourts (often directly adjacent to their palaces), to legitimize their right to rule. As Monte Albán's power waned, the Mesoamerican ballgame (and associated ballcourts) appear to have taken on new significance as a means of negotiating and legitimizing power relations (Feinman & Nicholas, 2011b; see also Wilkerson, 1991, p. 48). The processes and changes associated with the decline of Monte Albán occurred across the Valley Oaxaca, with local elites exerting control over much smaller areas than Monte Albán's rulers had been able to control. With Monte Albán's diminishing fortunes at the end of the Classic period, the Ejutla Valley once again became more politically and economically autonomous of the Valley of Oaxaca, although we suspect that this transition occurred slowly with periodic ebbs and flows in relations (see discussion in Chapter 9).

Spatially, there is general although not complete agreement in the mound and population hierarchies in Ejutla (Fig. 8.5), and the dispersal of settlement across the region seems to indicate the presence of three settlement clusters. Organization in each cluster may have varied, though, given the different numbers of population and mound centers and their proximity to each other. The western cluster had more mound centers (three of the six largest), whereas the central cluster had more population centers (four of eight). The two largest centers in the eastern and western clusters form closely spaced pairs, each with a higher- and lower-ranking site in terms of population. The population centers in central cluster are more dispersed.

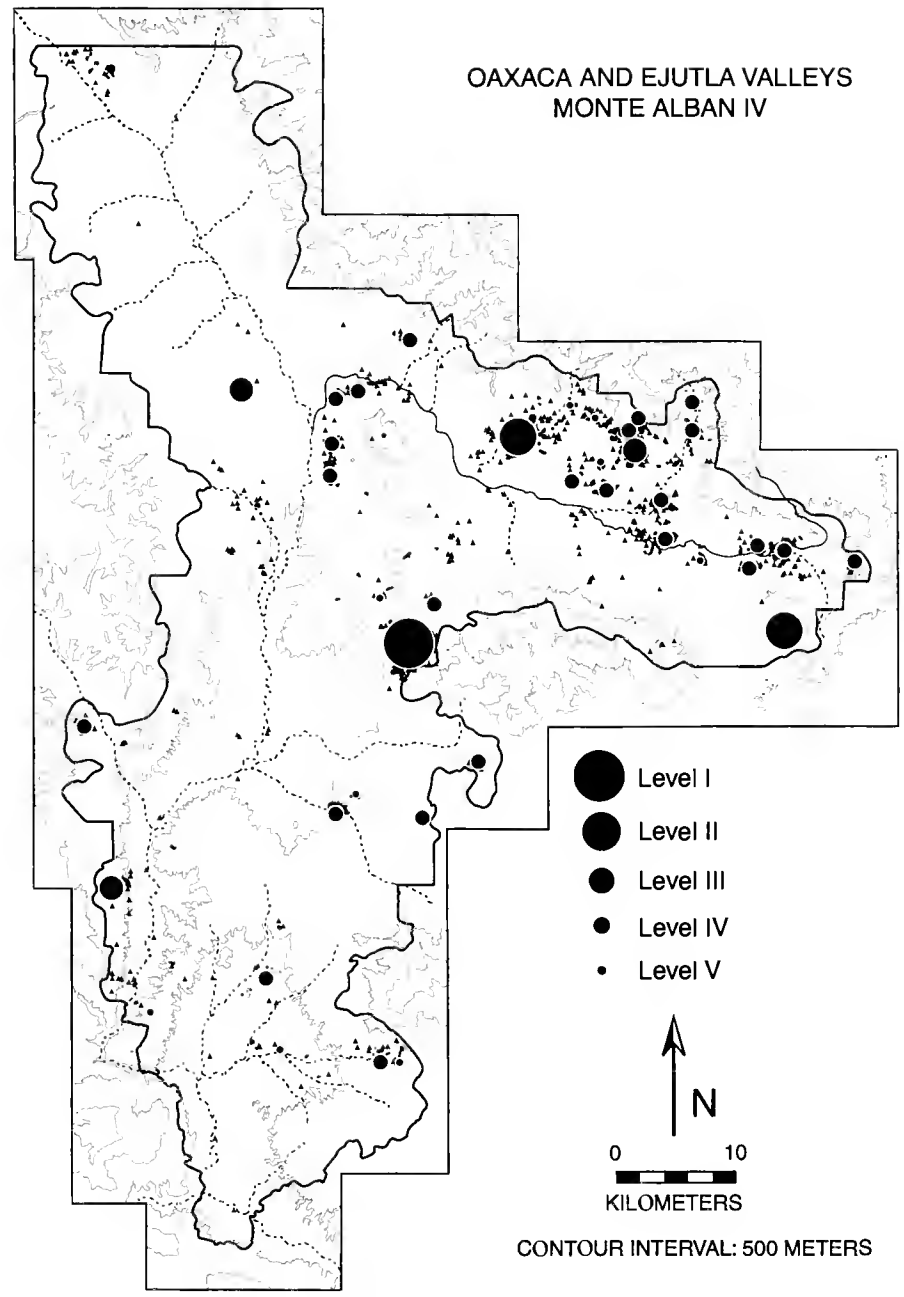



FIG. 8.8. Monte Albán IV population centers in Ejutla and the Valley of Oaxaca.

## Ceramics

In distinguishing Monte Albán IIIB and IV ceramic assemblages during the Ejutla survey, we followed the criteria laid out in Kowalewski et al. (1989, pp. 251–254). At most later Classic period sites in Ejutla, the majority of the surface ceramics were varieties (e.g., G-35) that occurred throughout the Classic period and therefore could not be used to distinguish IIIB from IV. When we did find pottery that was potentially diagnostic, it was more similar to what was called Monte Albán IV in Oaxaca than to Monte Albán IIIB. Because Monte Albán IV assemblages were more prevalent in Tlacolula (especially) and the Valle Grande, our comparisons of Ejutla with the Valley of Oaxaca are based on the patterns in those two subareas.

Overall, there is less diversity (i.e., fewer defined ceramic types) in the Classic period ceramic assemblages in Oaxaca (IIIA through IV) than in the earlier Monte Albán phases (Kowalewski et al., 1978). Yet, in spite of the lower number of ceramic varieties for both IIIA and IV, ceramic distributions for the two phases are quite different. In Monte Albán IIIA, the distribution of various ceramic types was fairly homogeneous across both Oaxaca and Ejutla, reflecting an integrated economic exchange system. In contrast, in Monte Albán IV, there was considerable variation in ceramic assemblages across

FIG. 8.9. Monte Albán IV population histogram for Ejutla.

both regions and especially in the three settlement clusters in the Ejutla Valley.

### Ceramic Distributions

On a broad scale, the distribution of gris ceramics in Ejutla is most similar to southern Valle Grande (Kowalewski et al., 1989, pp. 299–300). Ceramic types that were prevalent in southern Valle Grande also were common in Ejutla; other types were rare or absent in both areas. For example, T1268 beveled rim bowls are found in northern Valle Grande and in Tlacolula; there are almost none in southern Valle Grande (Kowalewski et al., 1989, p. 300), and we did not record any in Ejutla. Two other varieties that are more prevalent in southern Valle Grande than elsewhere in the valley (T1274 nubbin supports and T1508 storage jars; Kowalewski et al., 1989, pp. 299–300) are present in Ejutla.

Despite the overall ceramic similarity with southern Valle Grande, there still were differences between the three settlement clusters in Ejutla. The central cluster—with San Joaquín (IV-7) and the Ejutla site (IV-15)—has the most diverse gris ceramic assemblage, with a much higher density of G-35 bowls (TI126) and hollow supports (T1263) than the other two clusters (Table 8.8). These two types pertain to the entire Classic period, though, and could reflect ceramic production that occurred at San Joaquín and the Ejutla site during Monte Albán IIIA. It also may reflect that these two settlements continued in use though likely declined in size during Monte Albán IIIB and IV (see Chapter 9). Five less common bowls and jars (T1140, T1141, T1143, T1274, and T1422) also are found only in the central cluster. G-1 jars (T1120) and large storage jars (T1508) are present in greater densities in the western cluster, and one other uncommon bowl type (T1138) is present only in the western cluster. Only the most common types (T1126, T1120, T1263, and T1508) are present in the eastern cluster.

We did not identify ceramic production on the surface of any Monte Albán IV site during the survey; however, that does not rule out small-scale ceramic making at one or more settlements in the region since this activity is not always easy to detect from surface findings alone. During subsequent excavations at the Ejutla site, we documented Classic period ceramic production in association with a residence that likely extended into Monte Albán IIIB–IV (Balkansky et al., 1997; Feinman & Balkansky, 1997). Thus it is likely that some of the ceramic vessels were made locally (at the Ejutla site), and this would account for the higher density in the central cluster. Yet the distributional patterns suggest that the three settlement clusters also may have participated in different local exchange/marketing networks. For example, the high density of the ubiquitous G-35 bowls (T1126) in the central cluster is best matched by distributions in Tlacolula (Kowalewski et al., 1989, fig. 9.20). Although the large storage jar (T1508) that is found almost exclusively in the Valle Grande (Kowalewski et al., 1989, p. 299) is present in all three clusters in Ejutla, the densities are much higher in the western cluster. Vessels with nubbin supports (T1274) that are much more common in the Valle Grande than Tlacolula (Kowalewski et al., 1989, p. 300) are present only in the central Ejutla cluster. Overall, residents of Ejutla's central cluster were getting a wider variety of gris pottery.

The pattern for café pottery is much different. Café conical bowls (T2086) occur in relatively equal (if low) densities in all three clusters. They have a patchy distribution throughout the Valley of Oaxaca, especially in places near the edges of the valley (Kowalewski et al., 1989, p. 300). This spatial characterization also fits Ejutla with these bowls occurring in all three clusters.

In Oaxaca, A-7 imitation Fine Orange (T3030) sherds were found in low frequencies at larger sites and settlements with formal architecture, mostly in Tlacolula and the southern part of the valley (Kowalewski et al., 1989, p. 299, fig. 9.1) and in a small restricted part of Monte Albán (Blanton, 1978, fig. 4.37). Fine Orange also occurs at the largest sites in the Ejutla Valley

TABLE 8.8. Monte Albán IV ceramic varieties in three settlement clusters in the Ejutla Valley (sherds/ha).

| Ceramic type | Western | Central | Eastern |
|---|---|---|---|
| T1120 (G-1 jar) | 11.57 | 3.45 | 5.3 |
| T1126 (G-35 conical bowl) | 14.29 | 42.97 | 4.55 |
| T1137 (gris bowl) | 0.68 | 0.19 | 0 |
| T1138 (gris bowl) | 1.36 | 0 | 0 |
| T1140 (gris jar) | 0 | 0.77 | 0 |
| T1141 (gris jar) | 0 | 0.19 | 0 |
| T1143 (gris bowl) | 0 | 0.38 | 0 |
| T1263 (hollow support) | 2.04 | 7.48 | 1.51 |
| T1274 (nubbin support) | 0 | 3.84 | 0 |
| T1422 (gris *molcajete*) | 0 | 2.11 | 0 |
| T1508 (gris storage jar) | 6.12 | 1.73 | 2.27 |
| T2014/T2418 (café *comal*) | 0.68 | 1.51 | 3.03 |
| T2086 (café conical bowl) | 2.04 | 1.92 | 1.52 |
| T3030 (Fine Orange) | 2.04 | 1.15 | 0 |

in frequencies that match those of Tlacolula and the Valle Grande (Fig. 8.10). But given the much lower population of Ejutla, the relative abundance of Fine Orange is much greater on a per-capita basis there (4.6 pieces per 1,000 people compared to 0.75 per 1,000 for the Valley of Oaxaca). Per capita, the abundance for Ejutla is almost double that for the Central subarea, including Monte Albán. Imitation Fine Orange pottery occurs in the western and central clusters in Ejutla and also in the two isolated, southern settlements, Yogana and Amatengo. There was none in the eastern cluster. The presence of Fine Orange reflects external, conceivably Gulf Coast influence (Jiménez Moreno, 1966; Paddock, 1966), and the much greater relative abundance of Fine Orange in Ejutla indicates that powerful families there were forming new and/or strengthening existing exchange networks with areas to the east and south (Zeitlin, 1993). Likewise, the relative abundances of imitation Fine Orange in Tlacolula, the Valle Grande, and especially Ejutla (as well as Miahuatlán; Brockington, 1973, p. 55; Markman, 1981, p. 101), conforms with a model in which these valley sectors were the first to begin to break away from Monte Albán, starting late in the Classic period, and establish networks of communication with more distant regions.

Thus as Monte Albán declined, San Joaquín, the principal center in Ejutla, suffered from the loss of connections to the capital, losing population and power by the end of Monte Albán IIIB–IV. As the population fragmented into smaller, more autonomous settlement clusters, they began to establish new connections and exchange routes with communities in Ejutla and Oaxaca and beyond, and the earlier connection between northwestern Ejutla and the Ayoquezco area of southern Valle Grande reemerged (possibly through El Choco). The remaining population at San Joaquín still maintained some of their earlier connections, though, so that the central area continued to have access to a wider variety of ceramic vessels. The eastern cluster (Coatecas), the smallest and most isolated of the clusters, developed the fewest routes of exchange/interaction with other parts of Oaxaca and beyond.

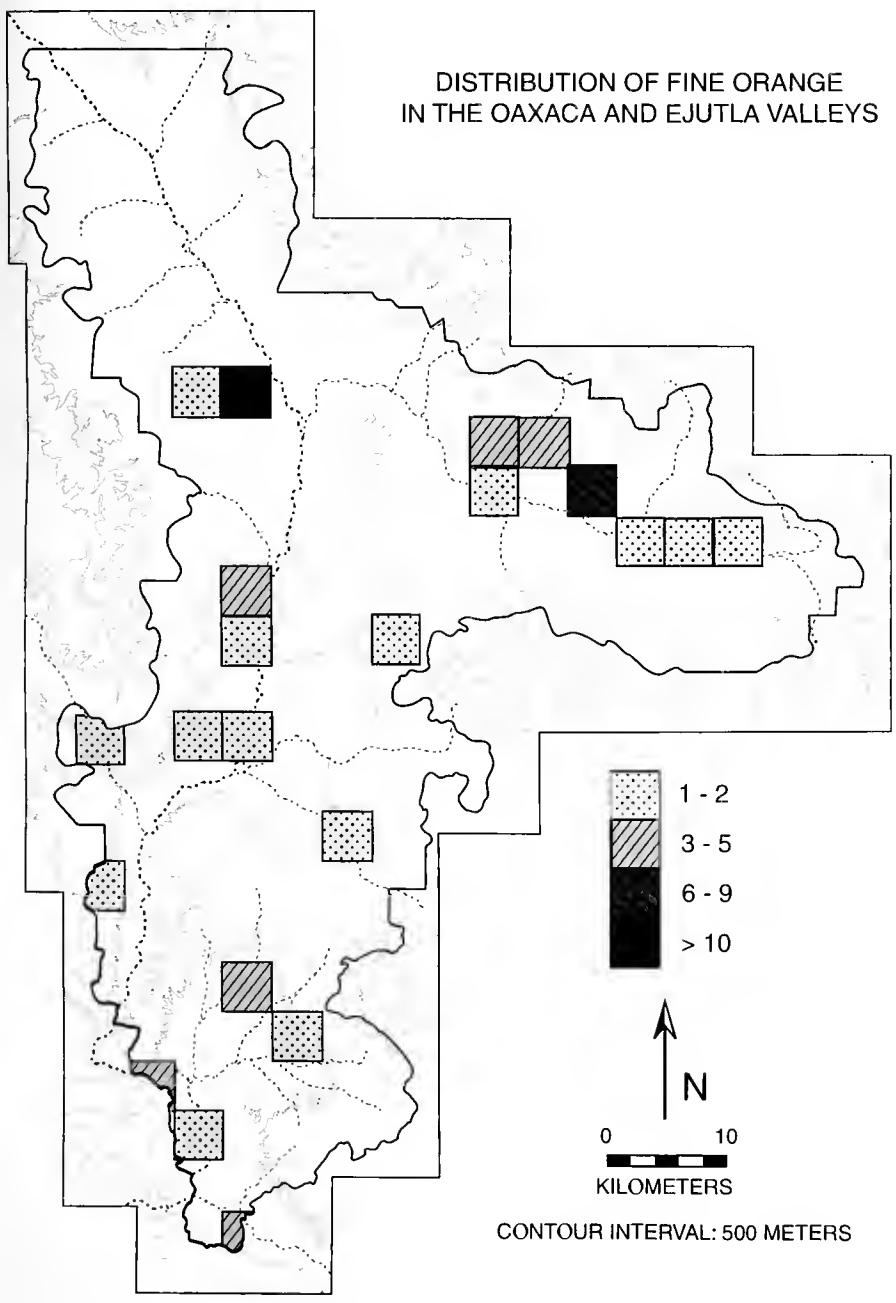



FIG. 8.10. Distribution of Fine Orange in Ejutla and the Valley of Oaxaca.

### Ceramic Types per Site

There are fewer defined ceramic types for Monte Albán IV than for earlier phases, so the average number of ceramic types per site was lower in both the Valley of Oaxaca and the Ejutla Valley. In addition, the differences in the average number of ceramic types at sites with mounds versus those without were lower in both valleys than during any prior phase (Table 8.9). Given the low ceramic diversity overall, the relative difference between Ejutla and Oaxaca had not been so great since Monte Albán Early I. This difference is largely a consequence of high numbers of ceramic types at several large sites with mounds in the Valley of Oaxaca, as sites without mounds in both valleys had comparable numbers (3.5 and 3.4). In contrast, mound centers in Ejutla had considerably fewer ceramic types (4.4) than similar centers in Oaxaca (6.4). Residents of the mound centers in Ejutla appear to have been affected more by the decline of Monte Albán than was the case for the inhabitants of settlements without mounds (commoners). As prior exchange connections began to break down, the channels of communication between the Valley of Oaxaca and Ejutla weakened. As a result, relative access to a variety of goods was altered (diminished) more at the larger sites than at smaller communities.

With Monte Albán's loss of power and influence, there was less integration across the Valley of Oaxaca, and variation in average number of ceramic types per site increased between subareas. Etla, Ejutla, and Central (without Monte Albán) had the lowest ceramic diversity (3.9 types per site in all three areas). Ceramic types per site in Tlacolula, which was becoming the new core area of Oaxaca, still was not much higher. In the Central subarea, ceramic variety was high only at Monte Albán. Average number of ceramic types at sites with mounds follows the same pattern.

TABLE 8.9. Average number of ceramic types at Monte Albán IV sites in Ejutla and Valley of Oaxaca subareas.

| | Types per site | Sites with mounds | Sites without mounds |
|---|---|---|---|
| Ejutla Valley | 3.9 | 4.4 | 3.5 |
| Oaxaca Valley | 5.0 | 6.4 | 3.4 |
| Etla | 3.9 | 4.5 | 3.6 |
| Central | 5.9 | 8.5 | 3.3 |
| Central (without Monte Albán) | 3.9 | 4.7 | 3.3 |
| Valle Grande | 5.6 | 6.8 | 4.3 |
| Ocotlán | 10.7 | 10.7 | — |
| Ocotlán (without Jalieza) | 7.0 | 7.0 | — |
| Tlacolula | 4.2 | 5.5 | 3.0 |

The average number of ceramic types per site varies in the three settlement clusters in Ejutla. Although at least one of the largest population centers was situated in each cluster, the central cluster had the most large population centers and the most sites with high ceramic diversity. This cluster is what remained of the core of the Monte Albán IIIA settlement system in Ejutla, and San Joaquín (IV-7) remained one of the largest sites and had the highest number of ceramic types (Table 8.5). Not all interaction/exchange routes with the Valley of Oaxaca were lost, and this cluster may still have been more connected to prior networks in Oaxaca than the other two settlement clusters.

Mound centers also were present in each cluster, but half of the largest mound centers were in the western cluster. The largest IIIA center in western Ejutla (EJ-SML-SML-16) continued to be a major population center in Monte Albán IV (component IV-45), yet its ceramic diversity was close to the average for all sites in Ejutla. The three mound centers in the western cluster were newly settled in Monte Albán IV, possibly by elites trying to gain power in the vacuum created by the fall of Monte Albán. One of these new mound centers, EJ-LC-LC-8 (IV-47), had greater ceramic variety than the larger, existing population center at EJ-SML-SML-16.

In the small eastern cluster, population, mounded architecture, and the highest number of ceramic types were all concentrated in one site, Coatecas (IV-23). In the other two clusters, these three indicators were more evenly distributed across four or five sites, especially in the western cluster. The settlement clusters in Ejutla appear to have been organized differently, and each engaged in its own exchange/distribution networks.

## Human/Land Relationships

During Monte Albán IV, the archaeological population as a percentage of the resource-based potential fell to 15% in Oaxaca (Nicholas, 1989) and to 3% in Ejutla (Table 8.10). There was even greater variability relative to resources across the Valley of Oaxaca, though, as populations shifted toward Tlacolula. The highest populations relative to resources were in eastern Tlacolula; the lowest were in areas at the edge of the earlier core cluster centered at Monte Albán, in southern Valle Grande and Etla.

The differences between the Valley of Oaxaca and its southern neighbor are even greater when available labor is considered. In Ejutla, population as a percentage of the labor-based potential population was lower than for any other phase (30%), while in Oaxaca, it was the highest of any phase (92%). The increasing concentration of people in Tlacolula (which began during Monte Albán IIIA), especially in the dry, eastern part of that arm, was an important dynamic. Trade connections established during Monte Albán IIIA continued to be important in allowing settlements to prosper in areas with little good farmland but where local resources could be used to produce a suite of nonsubsistence goods for exchange. In contrast, the much lower Monte Albán IV population in Ejutla was rather widely dispersed across central Ejutla near many good (if small) patches of land. As Monte Albán declined and new centers of power were established in eastern parts of the Valley of Oaxaca, the southern part of the valley, including Ejutla, were less connected into the networks that increasingly focused on Tlacolula. With less political and economic integration between Oaxaca and Ejutla, greater self-sufficiency in producing food may have been perceived as more necessary than it had been in IIIA. Yet the three settlement clusters in Ejutla likely retained a degree of economic interdependency.

Beeause the Monte Albán IV population was less evenly distributed across the Valley of Oaxaca and a number of large settlements were not well situated relative to good farmland, there was significant variability among subregions in the relationship between actual and labor-based potential populations. With Monte Albán's decrease in size, the total population of the Central subregion no longer greatly exceeded its potential population. Just the opposite occurred in northern Valle Grande, where the population of one large site (Jalieza), in the eastern mountainous edge of that subregion, quickly outstripped the productive potential of the nearby rural population. New large terrace sites in eastern Tlacolula also pushed up against labor-based potential populations in that subregion. In contrast, Etla and Ejutla are the two subregions that were most peripheral to the emerging core in Tlacolula and northern Valle Grande, and both areas had small populations that were far below potential levels.

The changing distribution of the population affected the potential production of surplus across the Valley of Oaxaca. Rural producers in northern Valle Grande could have continued to produce more surplus than any other subregion (Fig. 8.11), but even so it was not sufficient to feed Jalieza's burgeoning population, and the subregion was a net importer of agricultural produce. The rural producers of the Central subregion would have produced lesser amounts that were not quite sufficient, in average rainfall years, to feed themselves and Monte Albán's remaining population. Surplus potential was very low in eastern Tlacolula. All three subregions would have been net importers of agricultural

TABLE 8.10. Estimated archaeological, resource-based, and average labor-based potential populations for Ejutla and Valley of Oaxaca subregions in Monte Albán IV.

| | Ejutla | Etla | Central | Northern Valle Grande | Southern Valle Grande | Western Tlacolula | Eastern Tlacolula |
|---|---|---|---|---|---|---|---|
| Estimated archaeological population | 3,029 | 754 | 8,788 | 18,680 | 9,441 | 15,762 | 24,187 |
| Resource-based potential population* | 92,300 | 106,500 | 49,800 | 106,100 | 92,000 | 85,300 | 39,500 |
| Average labor-based potential population** | 10,000 | 3,600 | 8,300 | 12,900 | 12,300 | 22,400 | 23,300 |

* Based on full exploitation of all agricultural land resources in each subregion.

** Based on available labor supply and equal use of Class I and II land near recorded settlements.

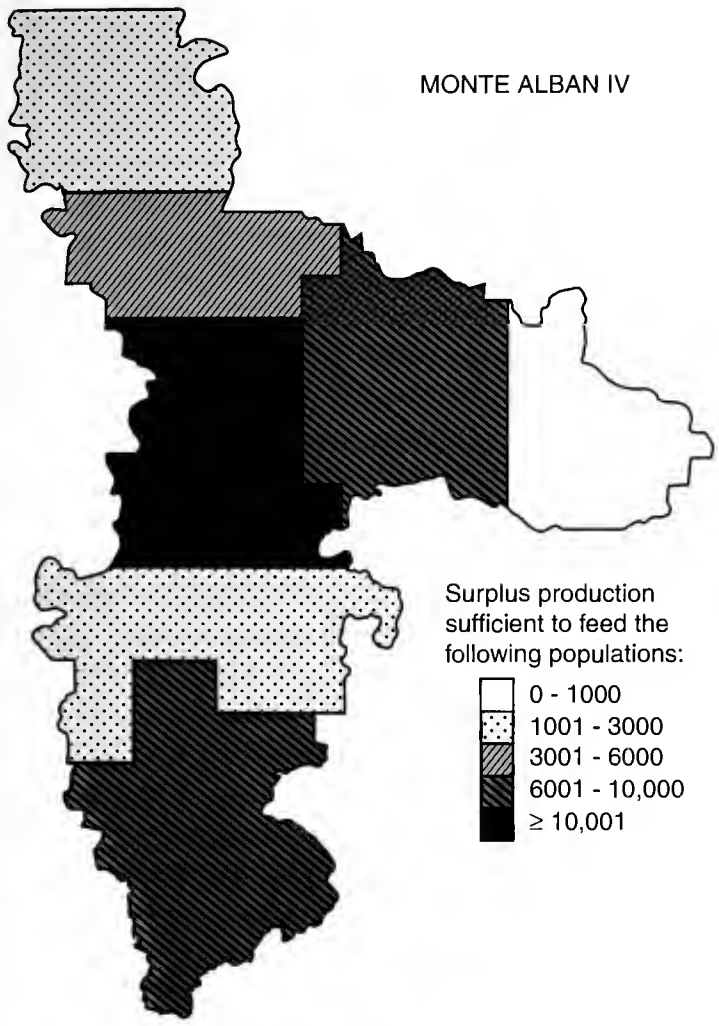



FIG. 8.11. Monte Albán IV surplus in Ejutla and Valley of Oaxaca subregions (based on rural producers, Central area does not include Monte Albán's population, northern Valle Grande does not include Jalieza's population).

produce. Significant surpluses were possible in western Tlacolula and in Ejutla, with lower surplus from Etla and southern Valle Grande.

With lower populations widely dispersed across the region, potential production in the Ejutla region was more than sufficient for the valley's population, even in dry years. The greatest surpluses would have been grown in the central cluster, where many settlements were located near some of the best agricultural land in the valley. Even in dry years, potential production was twice what was needed to feed the local populace. Lower amounts of surplus were possible in the eastern and western settlement clusters, where more of the population was concentrated in hilltop sites near the edges of the valley. In dry years, these clusters may have faced crop shortfalls, which could have been made up through exchange with the central cluster.

## Summary

The declining fortunes of Monte Albán at the end of the Late Classic period coincided with an episode of significant population disruption and reorganization across highland Mesoamerica (e.g., Diehl & Berlo, 1989; Hirth, 1995; Smith, 2002, p. 313; Kowalski & Kristan-Graham, 2007). Whatever the root cause, people voted with their feet, leading to marked demographic upheavals and transitions. Many areas experienced population loss and the decline of their principal centers; in other areas, new large centers were established, and populations grew. In this sense, the Valley of Oaxaca parallels the larger macroregion; the decline of Monte Albán led to shifting distributions of settlement across the valley and a decentralization of political influence/control. Yet, although populations in the valley were lower overall than during the Early Classic, demographic changes were not dispersed evenly, and one subregion, eastern Tlacolula, experienced considerable population growth as Monte Albán was declining. The greatest population losses were in parts of Monte Albán's core, including the central part of the valley and Etla. Populations began to shift to the eastern, Tlacolula arm of the valley, which became the most densely settled part of the valley in Monte Albán IV and later. There was no new core cluster but rather a number of small semiautonomous polities that competed with each other in the power vacuum created by Monte Albán's fall. At the same time, a degree of interconnectivity across the valley was maintained by household-to-household and site-to-site economic interdependency and intersite high-status marriages (Marcus, 1992, pp. 238–245, 2006; Urcid et al., 1994).

As the new demographic center of the valley incrementally shifted east to Tlacolula, the southern edge of the earlier Monte Albán polity, in southern Valle Grande and Ejutla, experienced large population declines. Although economically and politically integrated into the earlier Monte Albán polity, more peripheral areas, like Ejutla and the southern edges of the Valle Grande, may never have been as strongly tied to the capital. Elites at these southern centers may have lost influence as their earlier connections to the capital weakened. The different experiences of elites at the southern edge of the Valley of Oaxaca are signaled by the absence of genealogical registers there. Such stones have been recovered at settlements in Tlacolula (even the eastern end of that subregion), northern Valle Grande, Etla, and the Central subregion but not farther south (Marcus, 1983f, 1992, 2006; Urcid et al., 1994; Masson & Orr, 1998; Urcid, 2003; Feinman, 2007). A different kind of monument featuring elite women (but not in genealogical succession) has been found in Ejutla and Sola and likely date to this phase (Marcus, 2002).

The large Early Classic centers declined as local elites moved to establish new settlements and networks of interaction. In Ejutla, the Monte Albán IIIA population splintered into three small, semiautonomous settlement clusters, each centered on several larger population centers and several mound centers. In each cluster, there was one site that has a small ballcourt as part of a small closed architectural group that was constructed during Monte Albán IV. The construction of the ballcourts appears to be a strategy that local elite used to legitimize their right to rule. In other respects, the clusters differed from each other. Although of relatively similar population size, they were organized differently. With greater autonomy, the residents of the different clusters began to form their own networks of exchange with each other and other communities in the Valley of Oaxaca and beyond. They also likely engaged in exchange of agricultural produce.

Although their boundaries were fluid, almost certainly shifting over time, many of the small settlement clusters that formed in the Valley of Oaxaca and in Ejutla during the waning hegemony of Monte Albán grew to become the petty

ns of the Late Postclassic (Monte Albán V). The al surveys have laid out the broad outlines of this tion, but because of long-standing problems with the Classic–Postclassic ceramic chronology for the Valley of Oaxaca, significant questions remain. We take up the chronology issue in the following chapter. Then, drawing on both the regional surveys and the findings from more recent excavations at several Classic–Postclassic sites, as well as some documentary accounts, we present a revised picture for this era of transition in the Valley of Oaxaca.

# Chapter 9: The Classic–Postclassic Transition in the Central Valleys of Oaxaca: A New Perspective

> It is not possible to construct a science of man without a temporal dimension any more than it is possible to construct a science of astrophysics without knowing the age of the stars and the galaxies.
>
> (Ladurie, 1977, p. 136)

The long transition in the Valley of Oaxaca from the height of Monte Albán's influence during the Middle Classic period (ca. AD 500; Table 9.1) to the organization of the region a millennium later at the time the Spanish arrived can be viewed as an episode of dramatic change, especially if one focuses narrowly and exclusively on both ends of this continuum. The Middle Classic period was marked by the dominance of centrally situated and monumental Monte Albán, whereas the late pre-Hispanic era was a time of relative political fragmentation and less architectural grandeur. This transition, which has been associated with supposed decadence, collapse, and abandonment (Paddock, 1987, p. 29; Winter, 1989, 1990), is marked by key shifts in the size of polities, the predominant forms of civic-ceremonial architecture, changes in the primary media and the nature of written communication, differences in the portrayal (and role) of rulers, increasing volumes of extraregional exchange, and observable contrasts in the nature of the region's ceramic complex (e.g., Feinman, 1996). In fact, the valleywide changes between the Middle Classic and Late Postclassic (Table 9.1) periods were viewed as so profound that earlier generations of scholars, such as Caso, Bernal, and Paddock (Caso & Bernal, 1965; Paddock, 1966), interpreted this transition as involving an ethnic or population replacement. At the same time, though, elements of continuity from the Middle Classic to the Late Postclassic period have been noted in key aspects of domestic life and ritual (Winter et al., 2007) as well as the long-standing predominance of gris pottery in the region (Feinman et al., 1989).

The Middle Classic–Late Postclassic transition in the Valley of Oaxaca occurred over a much longer span of time—approximately a millennium (ca. AD 500–1500)—than did the rise of Monte Albán, which was an era of somewhat more rapid punctuated change. In contrast, the changes in the Valley of Oaxaca from the Late Classic to the Late Postclassic seem to have taken place more incrementally, with key aspects of the transition dispersed over a longer temporal span than has been suspected previously. In a comparison of the valley during the Middle Classic with its organization 1,000 years later during the Late Postclassic, the differences are indeed significant, but the pace of change was neither exceedingly rapid nor cataclysmic. The transition almost certainly did not involve a major ethnic replacement for the bulk of the region's populace.

Unfortunately, our interpretations of the Classic–Postclassic transition and the decline of Monte Albán in the Valley of Oaxaca have long been plagued by the nature of the archaeological record and significant chronological problems that have hampered our understanding of this key temporal episode. The regional surveys produced the first valleywide picture of settlement patterns for this era, from the Early Classic through the Late Postclassic (Monte Albán IIIA, IIIB, IV, and V; Blanton et al., 1982; Kowalewski et al., 1989). The surveys recorded important changes over time, along with valleywide population distributions for Monte Albán IIIB and IV that seem a bit improbable. This relative lack of spatial overlap between the settlement patterns of those two phases has raised questions for decades (Winter, 1989; Lind, 1991–1992, 1994a).

Recently, there has been increased attention paid to the later pre-Hispanic history of the Valley of Oaxaca, including the decline of Monte Albán (e.g., Blomster, 2008). Through a bevy of recent field studies, including our own, at several Classic period sites in the Valley of Oaxaca (Feinman & Nicholas, 2004b, 2005, 2009, 2010b; Casparis, 2006; Blomster, 2008; Faulseit, 2008, 2010; Elson, 2011), new empirical information is now available that allows archaeologists a chance to forge new perspectives on this era of change that until recently has proven difficult to decipher (e.g., Markens, 2004; Feinman & Nicholas, 2011a). Here we reconsider what we know about the decline of Monte Albán and its implications for the valley's demographic history and the chronology we use to study that era. This reevaluation is particularly appropriate for the timing of this volume, given the contrasts and discussions of the Monte Albán IIIA and IV settlement patterns that are presented for Ejutla (see also Feinman & Nicholas, 1990a).

To begin, we consider relevant findings from excavations that we conducted (subsequent to the implementation of the Ejutla survey) at three Classic period sites in the valley: at El Palmillo (Feinman et al., 2002, 2008; Feinman & Nicholas, 2009) and the Mitla Fortress (Feinman & Nicholas, 2010b, 2011c) in eastern Tlacolula and at the Ejutla site in the center of the Ejutla Valley (Feinman & Nicholas, 1996b, 2000, 2004b; Fig 9.1). We focus this discussion on specific issues that pertain to the ceramic chronology of the Valley of Oaxaca, the later history of Monte Albán, and what happened as that center lost population, power, and influence or clout across geographic space. We then turn to a series of chronological issues relevant to the later history of Monte Albán and the subsequent Postclassic era. These issues have been raised previously (Paddock, 1983c; Winter, 1989, 1997, 2003b; Marcus & Flannery, 1990; Lind,

TABLE 9.1. Classic and Postclassic chronologies for the Valley of Oaxaca.

| Years AD | | Paddock, 1989 | Winter, 1990 | Lind, 1991-1992 | Blanton et al., 1993 | Martínez et al., 2000 | Feinman & Nicholas |
|---|---|---|---|---|---|---|---|
| 1500 | Late Postclassic | Mixtec dynasties | Monte Albán V | Chila phase | Monte Albán V | Chila phase (Late V) | Monte Albán Late V |
| 1400 | | | | | | | |
| 1300 | | | | | | | |
| 1200 | | Monte Albán V | | | | Liobaa phase (Early V) | Monte Albán Early V |
| 1100 | Early Postclassic | Mixtec invasions | Unidentified sequence | Liobaa phase | | | |
| 1000 | | | | | | | |
| 900 | | Monte Albán IV | | | Monte Albán IV | | Monte Albán Late IIIB-IV |
| 800 | Late Classic | | | Xoo phase | | Late Xoo phase Early | |
| 700 | | Monte Albán IIIB | Monte Albán IIIB-IV | | Monte Albán IIIB | | Monte Albán Early IIIB-IV |
| 600 | Middle Classic | | | Pitao phase | | | |
| 500 | | | Monte Albán IIIA | | Monte Albán IIIA | Monte Albán IIIA | Monte Albán IIIA |
| 400 | | Monte Albán IIIA | | | | | |
| 300 | Early Classic | | | | | | |
| 200 | | | | | | | |

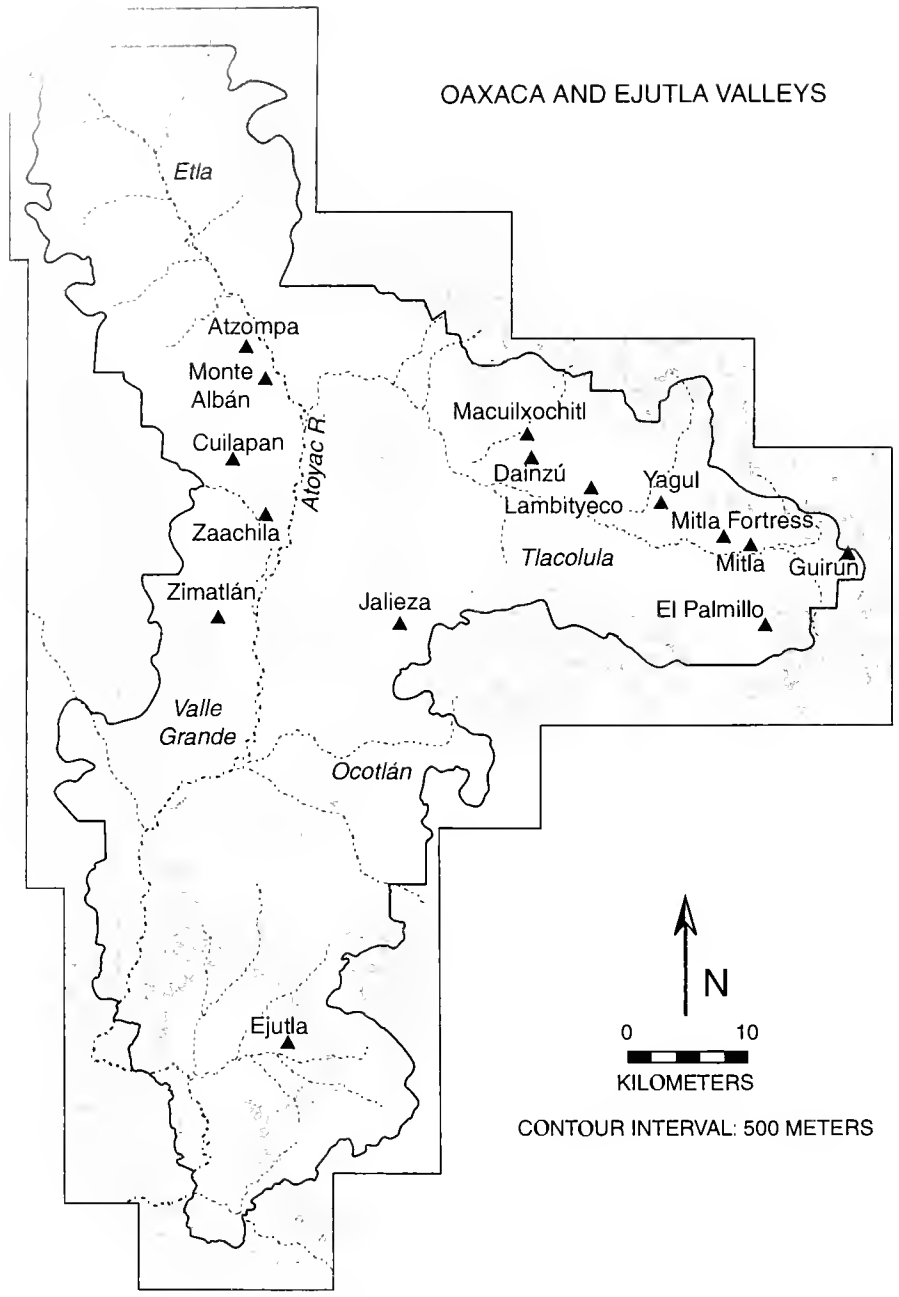



FIG. 9.1. Map of Ejutla and the Valley of Oaxaca, showing places mentioned in the text.

1994a; Martínez López et al., 2000; Markens, 2004), so our discussion is not exhaustive. To this review of the Valley of Oaxaca chronology, we add findings and perspectives drawn from our own research, both survey and excavation. Finally, we outline a diachronic scenario for change in the Valley of Oaxaca from the Middle Classic to the Postclassic. Because of significant lacunae in our data, our model serves as a preliminary scenario and a guide for further research rather than a final account of the region's history. This proposed scenario also offers slight amplifications of the settlement pattern findings offered in Chapters 7 and 8.

## Excavations at Classic Period Sites

Findings from our recent excavations at El Palmillo, a hilltop terrace site at the eastern edge of the Tlacolula arm of the valley, are especially relevant for our attempt to help resolve the Classic–Postclassic period chronological difficulties. During 10 seasons of excavation, we excavated eight residential terraces/houses dispersed across the slope and at the apex of the hill (Feinman et al., 2002, 2006, 2008; Haines et al., 2004; Feinman & Nicholas, 2005, 2009; Haller et al., 2006). The three residences at the top of the site were larger, elaborate residences (or palaces) while those on the slope were much smaller with fewer rooms. All of the residences were occupied during the Classic period. Elsewhere, we have discussed the economic importance of xerophytic plants for the inhabitants of the site (e.g., Feinman & Nicholas, 2005) and social status differences (Feinman et al., 2008, p. 179), which basically followed the hill's slope so that higher-status residents lived at the top and those who had less status resided below. Here we emphasize the chronological record from El Palmillo and the site's relationship with the rest of the Valley of Oaxaca, focusing on the palatial sector of the site, the occupational history of the whole site, and the process in which the site was abandoned.

Three palatial structures were built at El Palmillo, on the top, north side of the hill (Fig. 9.2). Each structure was rebuilt or remodeled at least four times and was inhabited for several centuries between roughly AD 500 and AD 850–900. Two of the palaces (Terrace 335 and Platform 11) include a subterranean masonry tomb, each situated below the earliest floor that was constructed prior to the erection of the palace. The third palace (Structure 35) was built slightly later in time than the other two and does not include such an underground feature. When first constructed, the two earlier palaces had a single large patio surrounded by rooms (Fig. 9.3), much like palaces at Monte Albán (e.g., Flannery, 1983b, fig. 5.5). But in subsequent construction episodes, when this sector of the site was most intensively occupied, each of the three palaces included more than one patio (Fig. 9.4). The largest and most elevated of these palaces (Platform 11) included three separate patios during its greatest expanse, each surrounded by rooms, as well as a sweat bath on the east side of the complex. The large patio likely was used for civic-ceremonial activities at that time, while the smaller patios, where *tlecuiles* were installed, served more residential functions (Feinman & Nicholas, 2009). A small I-shaped ballcourt was constructed between two of the residences after their initial construction, at the time when the Platform 11 palace was at its largest and most elaborate state (Feinman & Nicholas, 2011b).

It is very clear that the three palaces were not abandoned at the same time, nor did each of the palaces become uninhabited in one short episode. Rather, parts of each structure were closed off toward the end of their use, while other parts of the same palaces continued to be occupied (Fig. 9.5). For example, in its final building episode, the Platform 11 residence included only one patio, what had been the complex's largest during the prior surface. After a short period of use but before the Platform 11 residence was entirely abandoned, the small ballcourt was filled in, and the west mound of the court was turned into a wall of piled cobbles. From these data, it is clear that the decline and abandonment of the palatial sector of El Palmillo was a slow process that occurred over generations if not longer.

A comparison of $^{14}C$ dates from the eight excavated terraces at El Palmillo reveals that residences on lower terraces at the site fell into disuse earlier than did those at the top (Fig. 9.6). The abandonment of residences on the middle terraces occurred later than those at the bottom but before those at the top. These data also support our finding that the decline of the El Palmillo site was more a process than a cataclysmic event.

The abandonment of some commoner residences before palaces also occurred at the Mitla Fortress. Rabin's (1970) $^{14}C$ date for the adobe palace at the top of the Fortress (ca. AD 1385 [cal. AD 1402]) is later than the final residential use of three lower terraces that we have recently excavated at the site (Feinman & Nicholas, 2010b, 2011c). In the later pre-Hispanic Valley of Oaxaca, commoners may often have "voted with their feet" as the power of their leaders weakened.

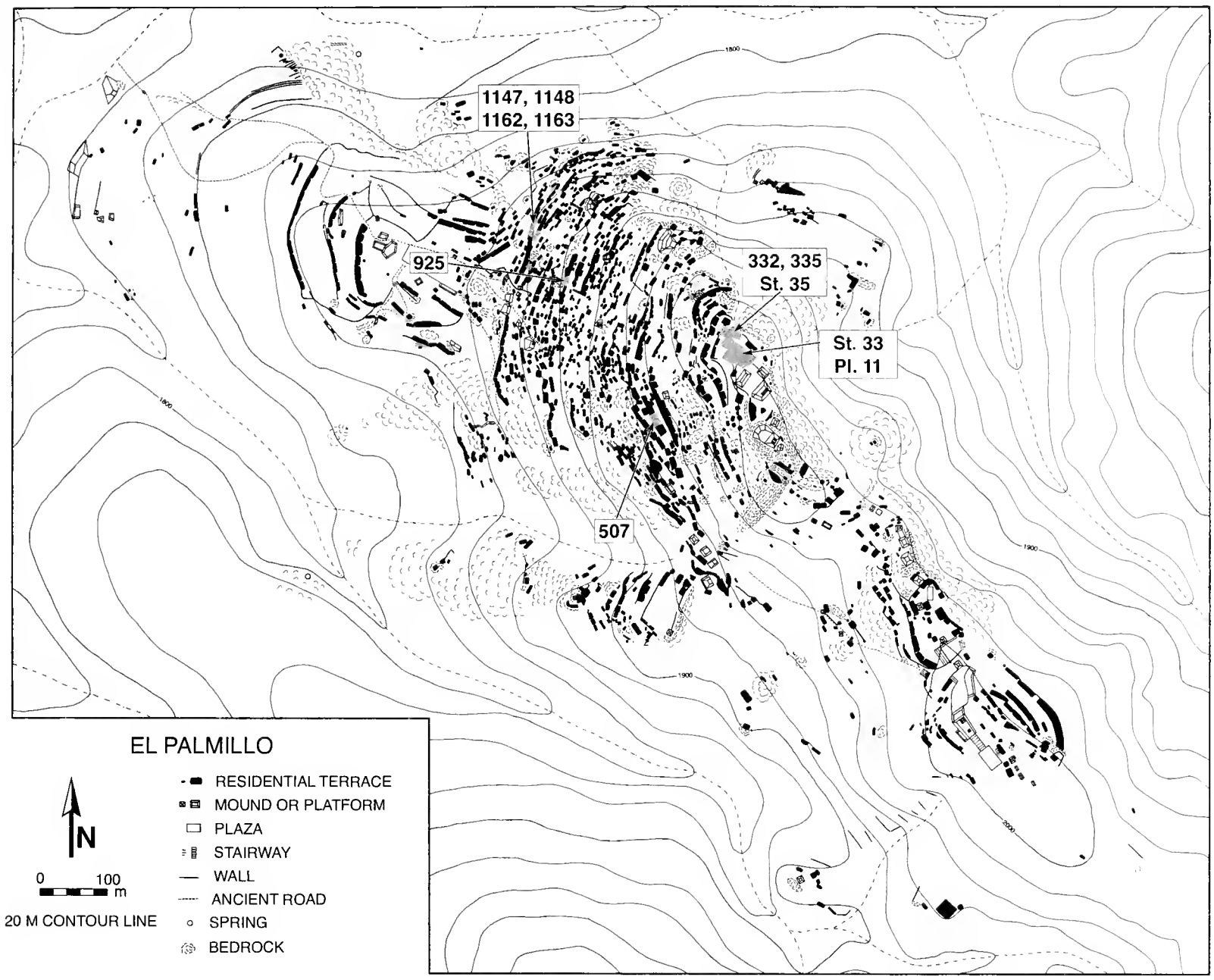



FIG. 9.2. Map of El Palmillo, showing location of excavated contexts.

Given the dating of the El Palmillo palaces to the Late Classic period, it is likely that a carved stone genealogical register—located today in a house wall in Santiago Matatlán—originally came from El Palmillo (Urcid, 2003, p. 67, fig. 1; Feinman & Nicholas, 2006, fig. 16). The carved stone is from one of the same stone sources that were used in palace construction at the site. El Palmillo was by far the largest Classic period settlement near Santiago Matatlán (Kowalewski et al., 1989; Feinman & Nicholas, 2004a), and it also has the most elaborate Classic period civic-ceremonial construction. All three palaces and several tall earthen platforms at the site (that we did not excavate) were damaged by looting. Based on conversations with local people, this destruction likely occurred many years ago, early in the 20th century (Caso, 1928), so it is highly probable that the stone in the Matatlán house wall originated from one of those contexts.

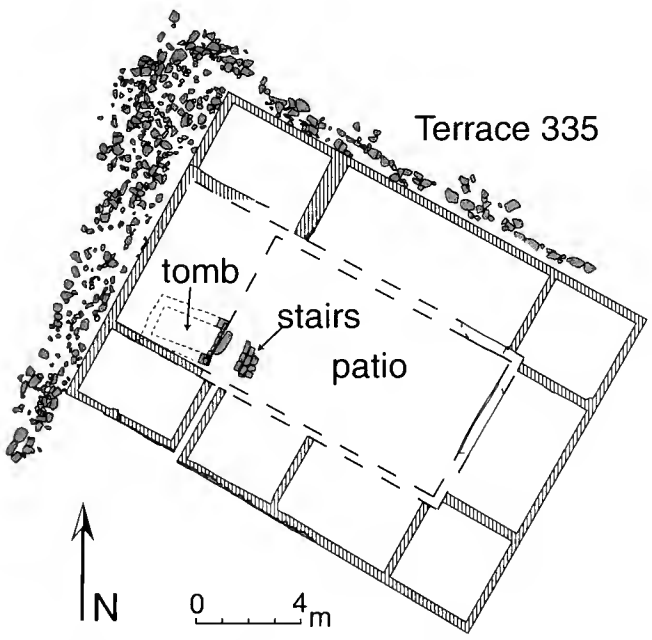



FIG. 9.3. Early residential complex with one patio on Terrace 335 at El Palmillo.

These observations regarding site abandonment and the genealogical register that appears to pertain to El Palmillo have important implications for both the chronology and the decline of Monte Albán as well as for the demographic dynamic in the Valley of Oaxaca from the Late Classic through Postclassic periods. Although our excavations at the Ejutla site do not address abandonment per se (we excavated only one small house), $^{14}C$ dates from the house and associated features provide a chronological sequence (Fig. 9.7) that can be compared to (and insightfully inform) the site's temporal record from the survey. Before we address these questions of long-term change, we briefly discuss the long-standing problems concerning late pre-Hispanic Valley of Oaxaca chronology.

## Classic–Postclassic Chronology of the Valley of Oaxaca

The difficulties and problems associated with the Classic–Postclassic ceramic chronology for the Valley of Oaxaca are

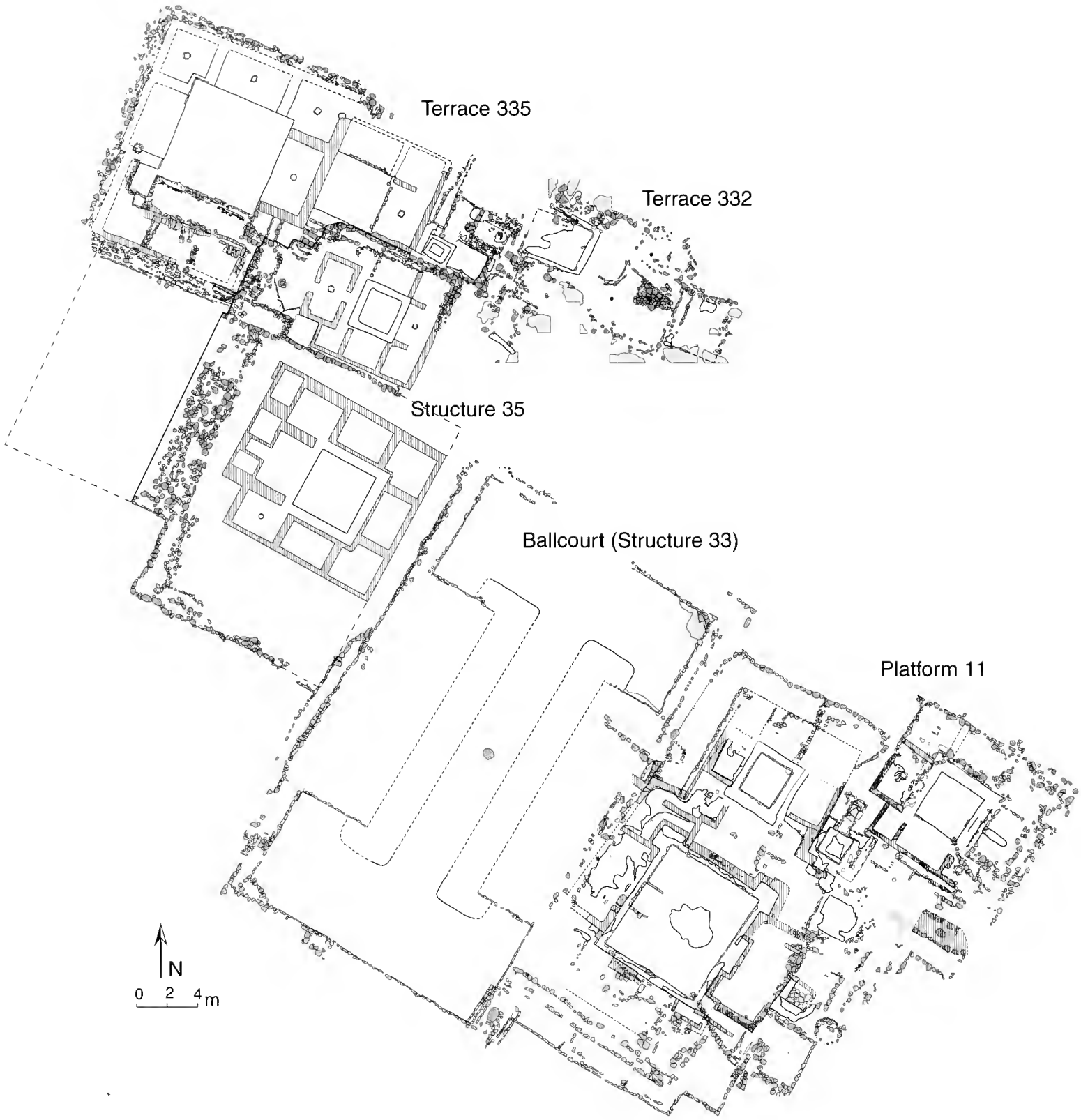



FIG. 9.4. Elaborate residences and ballcourt in penultimate pre-Hispanic surface of upper precinct at El Palmillo.

well known and have been debated for decades (Kowalewski, 1983; Paddock, 1983c; Winter, 1989, 1997, 2003b; Marcus & Flannery, 1990; Lind, 1994a; Martínez López et al., 2000; Markens, 2004). To begin with, Classic and Early Postclassic pottery from the valley is not nearly as decorated as earlier or later Oaxacan ceramic varieties (Caso & Bernal, 1965; Caso et al., 1967) or complexes of ceramics from many other parts of the world. Decorated varieties are rare, and the pace of major ceramic change was slow (Flannery, 1969, p. 107). If the pottery of this era in the Valley of Oaxaca had either been more intricately decorated or changed at a more rapid tempo through time, we have no doubt that Caso, Bernal, and Paddock would have resolved these issues years ago.

Instead, they made several problematic decisions as they wrestled with this difficult challenge. We are concerned here with the ceramic phases known as Monte Albán III, IV, and V (Table 9.1). Others have thoughtfully reviewed these chronological issues (e.g., Kowalewski, 1983; Marcus & Flannery, 1990; Markens, 2004); although we recommend and build on those works, we do not concur on every specific point with any prior treatment. One of the causes for the difficulties faced by archaeologists working on the Classic and Early Postclassic in Oaxaca "can be traced back to a decision made by Alfonso Caso in the early 1930s" (Marcus & Flannery, 1990, p. 191). Based on his early excavations at Monte Albán (Caso, 1935), Caso decided to distinguish what he considered Monte Albán IIIB and Monte Albán IV by relying on what he implicitly reasoned to have been a rapid and broadly impactful event, the abandonment of buildings around the Main Plaza at Monte Albán. To define this chronological distinction, his key criterion was entirely depositional or contextual rather than any striking changes in the ceramic assemblages (Paddock, 1978, p. 48; Marcus & Flannery, 1990, p. 193; see also Martínez López et al., 2000, p. 4; Markens, 2004, p. 38). The implicit expectation was that such an event should be marked by important shifts in pottery styles, although Caso et al. (1967) never were successful at defining any such changes. Now we strongly suspect that we know why; Monte Albán,

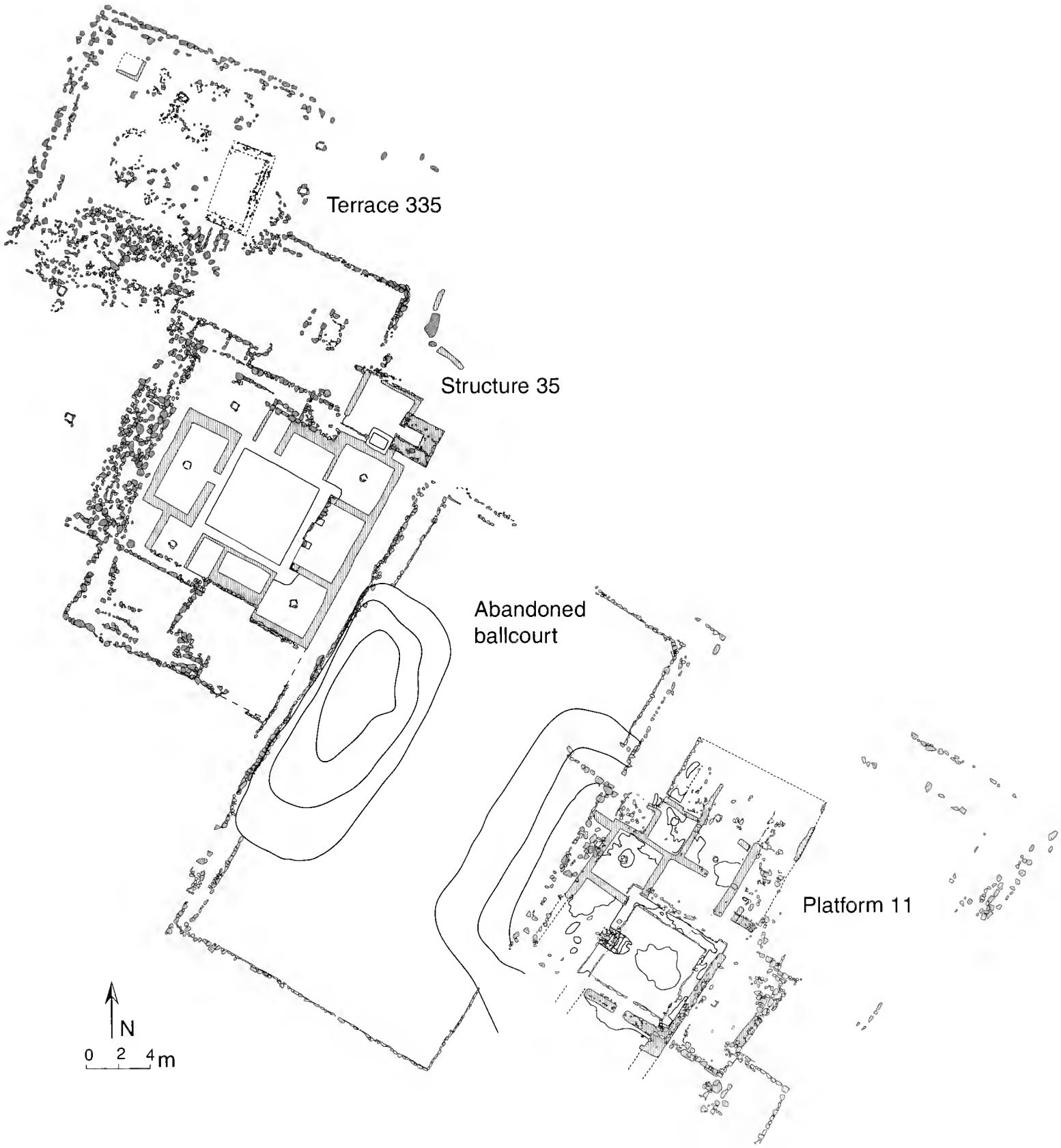
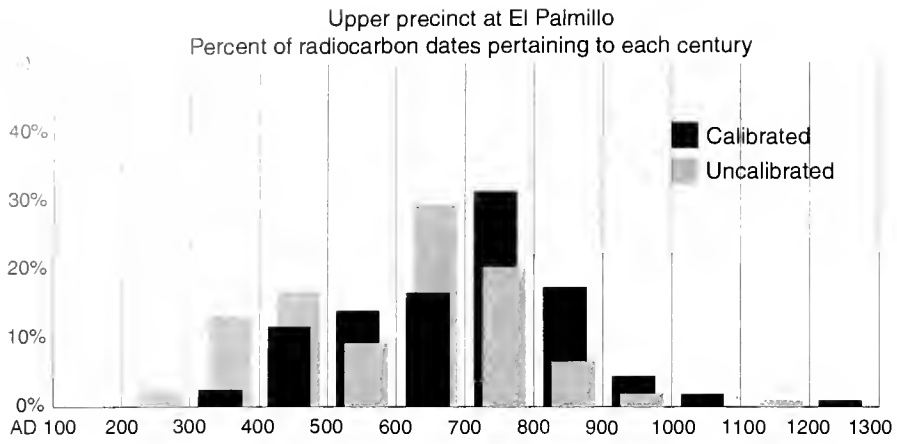
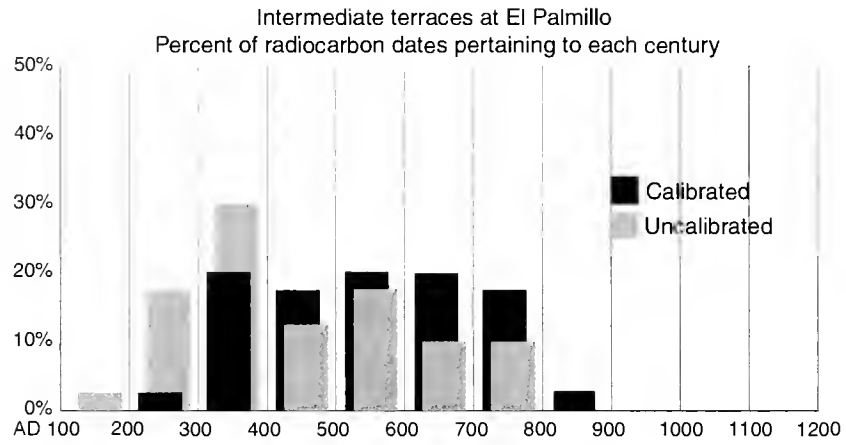



FIG. 9.5. Last pre-Hispanic surface of upper precinct at El Palmillo, showing abandoned ballcourt.

like El Palmillo, declined slowly over centuries, with some structures remaining in use while other buildings were fully or partly abandoned (Marcus & Flannery, 1990, p. 193; cf. Markens, 2011, p. 524). Monte Albán was not abandoned in a single episode as was once presumed (Paddock, 1978, pp. 49, 57). Although the site clearly lost much of its Classic period population, parts of the site remained in use throughout the pre-Hispanic era (Kowalewski et al., 1989, pp. 286, 317; Marcus & Flannery, 1990, p. 193), including a Monte Albán IV enclave on the north slope of the site (Acosta, 1965). Better and more current understandings of Mesoamerican ceramics in general now make this new, more gradual interpretation of the site's decline evident.

Unable to separate Monte Albán IIIB and IV, Caso et al. (1967) contrasted the IIIB–IV ceramics with later Monte Albán V, principally known from reused tomb contexts at the site, such as Tomb 7. The differences between IIIB–IV pottery and that from Monte Albán V were seen as so marked that the change was attributed to an ethnic shift (Caso et al., 1967, p. 447; Paddock, 1983d). In subsequent work, Bernal, working at Yagul (Bernal & Gamio, 1974), and Paddock, at Lambityeco (Paddock et al., 1968; Paddock, 1983a), endeavored to define an intermediate sequence more clearly. Bernal excavated the early Monte Albán V palace at Yagul, while Paddock defined what was considered to be Monte Albán IV at Lambityeco. Yet another key opportunity was missed during those studies when both Bernal and Paddock (Paddock, 1989, p. 48) associated specific ceramic varieties or markers with ethnic populations. At the time, they associated G-35s with the Zapotec, while G-3Ms were thought to be Mixtec (Fig. 9.8). At Yagul (Bernal & Gamio, 1974, p. 61) and, to a lesser degree, at Lambityeco, these ceramic varieties were found to overlap in time and so co-occur contextually, but this key piece of information was interpreted as representing the coexistence of two ethnic populations rather than used as a vital thread of chronological information.



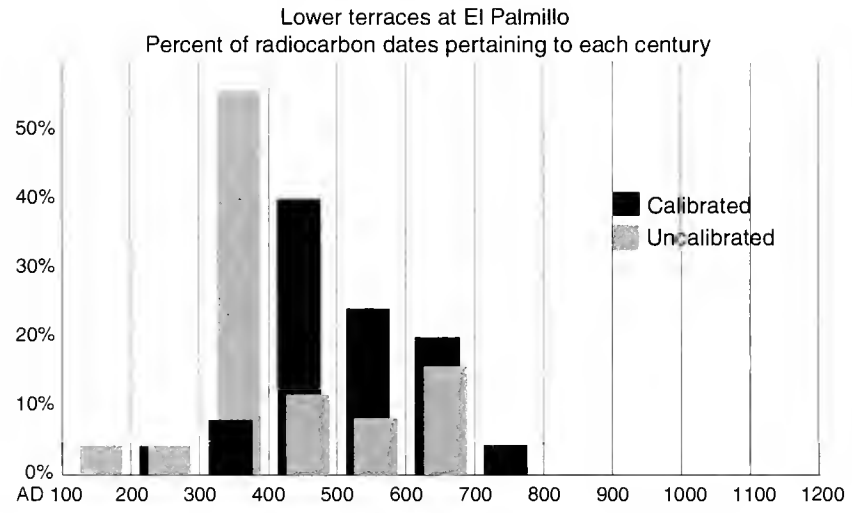




FIG. 9.6. $^{14}C$ dates from excavated contexts at El Palmillo.

Bernal and Gamio (1974, p. 61) excavated several stratigraphic pits in the Yagul palace. A close look at their report reveals that G-35 bowls, a common ceramic form during the Classic period (IIIA and IIIB–IV), were found in sizable quantities in all strata, including those with G-3Ms (Table 9.2). In addition, full-body café molded warrior and female figurines,

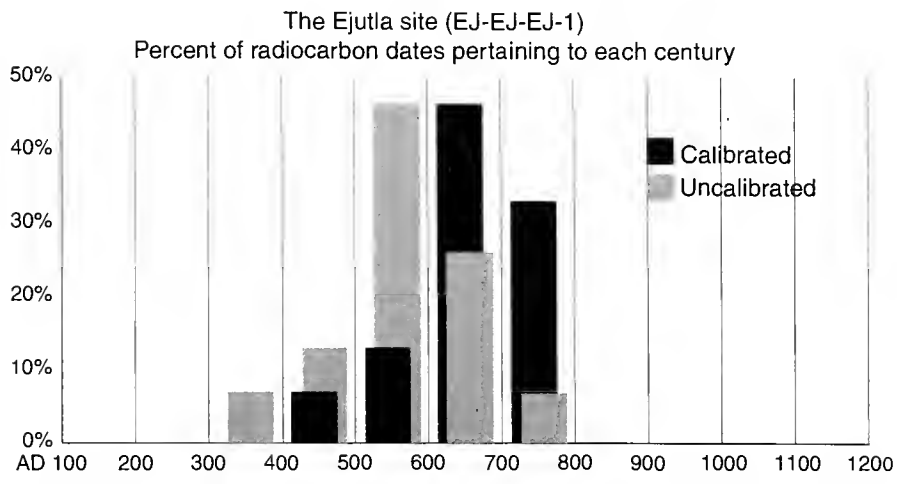



FIG. 9.7. $^{14}C$ dates from excavated contexts at the Ejutla site (EJ-EJ-EJ-1).

similar to those described for Lambityeco (Scott, 1993, figs. 34–38, 49, and 50), were found during the Yagul excavations, even in the uppermost floor and subfloor contexts as well as below (Bernal & Gamio, 1974, lám. 30 and 31). These contexts are generally assigned to the Early Postclassic period (ca. AD 900–1300; Drennan, 1983). Similar findings have been noted at other sites. Even at Monte Albán, G-3Ms were found in more than 20 contexts, such as tombs, burials, and offerings, and identified as Late Classic in date (Caso et al., 1967, table XVI; Paddock, 1978, pp. 49–50). Likewise, Bernal's (Bernal 1958; Marcus & Flannery, 1990, p. 200) excavations at Cuilapan revealed an extended transition from the tail end of the Classic to late Monte Albán V that included a number of strata with both G-35s (bowls typical of IIIB–IV) and some of the finer gris bowls and jars (G-3Ms) that typify Monte Albán V.

Several studies in the Tlacolula Valley, both in the past at Abasolo (Flannery, 1983c; Marcus & Flannery, 1990, p. 200) and more recently at Macuilxochitl (Faulseit, 2010), have found that the transition from the late IIIB–IV to late V ceramic complexes in the valley was much more gradual—with a transitional Early Postclassic complex. For example, the discovery (Faulseit, 2010, pp. 85–86) of a typical Classic period bowl covering a Postclassic period jar (a *patojo*) in the same Macuilxochitl offering would seem to contest rather definitively the earlier arguments advanced by Bernal and Paddock that drew equivalencies between pottery and the ethnicity of people. Likewise, we have argued earlier that the shift from G-35 bowls to G-3M bowls was more technological than ethnic (Feinman et al., 1989, 1992), involving primarily shifts in the ceramic paste recipe and firing temperatures. Years ago in Miahuatlán, Brockington (1973, p. 57) found at least a simple version of Monte Albán V pottery in lower levels of his stratigraphic pits mixed with Monte Albán IV pottery. The Monte Albán V pottery "did not simply succeed the former but rather accompanied it for a long time" (Brockington, 1973, p. 61). The full-body molded figurines at Miahuatlán (Brockington, 1973) show a transition into Late Postclassic forms. Bernal's (1966, p. 351) excavations in the South Group at Mitla offer added support for the continuity between the Late Classic and Early Postclassic, although his reported ceramic samples are small. From our excavations at El Palmillo, it is clear that these full-body figurine varieties and G-35 bowls extend to at least AD 900 and likely later (Fig. 9.9, bottom). We have found a similar overlap in our more recent work at the Mitla Fortress (Table 9.3 and Fig. 9.9, top).

As Winter (1997, p. 28) proposed more than a decade ago, some of the ceramic figurine varieties associated with late IIIB–IV (e.g., varieties highly similar to those described for Lambityeco by Scott [1993]) extended into the Early Postclassic period. The extended time frame helps account for close similarities between the full-body figurines in the Valley of Oaxaca with the central Mexican Mazapan figurines, which are thought to date to around AD 800–1000 (Cowgill, 1996, p. 327; cf. Scott, 1993, pp. 9–10). We are not suggesting that there were Tula-like sites or a Tula presence in Oaxaca; rather, the stylistic similarity noted by Scott for these figurines indicates chronological contemporaneity.

Material recovered from the cruciform tomb at Guirún in eastern Tlacolula that was excavated by Marshall Saville at the end of the 19th century (Saville, 1900, 1909) provides additional ceramic information (Fig. 9.1). Architecturally, the tomb appears to be Postclassic, with *greca* designs similar

FIG. 9.8. Two G-35 bowls from El Palmillo (top) and two G-3M bowls from the Mitla Fortress (bottom).

to those at Mitla (Feinman & Nicholas, 2004a, fig. 4.15). When we intensively surveyed Guirún in 1996, the associated surface ceramics were more characteristic of what we considered to be IIIB–IV than Monte Albán V (Feinman & Nicholas, 2004a, p. 71). Later, we studied Saville's collections at the American Museum of Natural History in New York. Those collections consist of what appear to be Late Classic urn fragments; gris bowls that are not especially well finished, including one small ceramic bowl with small solid supports similar to vessels from a late IIIB–IV tomb at El Palmillo; and a number of café miniature bowls like those that Markens (2008, p. 84, 2011) attributes to early Monte Albán V (Fig. 9.10). When we published this material, we found ourselves in a bit of a conundrum and suggested that the tomb might have been a late, unfinished addition to an earlier Classic period architectural complex (Feinman & Nicholas, 2004a, p. 71). We now believe that the collected ceramics pertain to very late IIIB–IV or, more likely, early Monte Albán V and that the tomb was constructed earlier in Monte Albán V rather than later. Several cruciform tombs with *greca*-style stonework that may date to early V also have been excavated at Yagul (Paddock, 1957) and Mitla (Robles García, 2009). A tomb with a similar *greca*-style mosaic was exposed illegally within the limits of the town of Santiago Matatlán. During the time that we excavated at El Palmillo, we were shown the tomb and some of the associated pottery

TABLE 9.2. Percentage of G-35s, G-3Ms, and polychromes in excavation pits at Yagul.*

| Level | % G-35 | % G-3M | % polychrome | Total ceramics |
|---|---|---|---|---|
| Pozo 1 | | | | |
| 1 | 18.52 | 6.46 | 0.02 | 2,845 |
| 1b | 15.74 | 8.14 | 0.02 | 1,492 |
| 2 | 16.68 | 4.88 | — | 247 |
| 3 | 14.52 | 6.21 | — | 435 |
| 4 | 21.92 | 0.35 | — | 1,340 |
| 5 | 38.37 | — | — | 752 |
| 6 | 39.87 | — | — | 3,784 |
| 7 | 38.26 | — | — | 3,184 |
| 8 | 32.72 | — | — | 2,664 |
| 9 | 21.11 | — | — | 1,043 |
| Pozo 2 | | | | |
| 1 | 18.40 | 6.40 | 0.22 | 4,144 |
| 2 | 23.84 | 3.46 | | 898 |
| 3 | 15.19 | 6.10 | — | 2,697 |
| 4 | 11.13 | 6.12 | — | 3,174 |
| 5 | 26.17 | — | — | 3,413 |
| 6 | 27.94 | — | — | 622 |
| 7 | 18.79 | — | — | 1,293 |
| 8 | 27.66 | — | — | 1,240 |

* Source (Bernal & Gamio, 1974, table between pp. 60 and 61).

FIG. 9.9. Figurines from the Mitla Fortress (top) and El Palmillo (bottom).

TABLE 9.3. Percentage of select ceramic categories from excavated surfaces on Terrace 56 at the Mitla Fortress.

| Surface | % G-35 | % G-3M | % proto-G3M** | % figurines | % urns | Total ceramics* |
|---|---|---|---|---|---|---|
| 1c (latest) | 6.96 | 14.94 | 5.62 | 2.08 | 0.79 | 1,781 |
| 1b | 14.98 | 1.85 | 3.11 | 2.48 | 1.74 | 2,536 |
| 1a | 14.37 | 1.29 | 1.08 | 1.87 | 1.36 | 1,392 |
| 2b | 15.33 | — | 2.12 | 1.39 | 2.32 | 1,507 |
| 2a (earliest) | 4.23 | — | — | — | 0.70 | 142 |

* Samples include all rim sherds, polychrome, figurines, and urns.

** This category includes vessels that have the form, thickness, or other characteristic of G-3Ms (e.g., composite silhouette and differential firing) but are not as well finished or burnished.

(Figs. 9.11 and 9.12), most of which is clearly Postclassic, likely early in that period. The notion that the ceramic transition from Monte Albán IV to V was more gradual than punctuated has long been expressed in the literature (Bernal, 1958; Flannery, 1983c; Marcus & Flannery, 1990, p. 200). Our addendum to this argument, based on the reconstruction of the ceramic sequence at Yagul and Miahuatlán and our recent findings at the Mitla Fortress, is that some of the key ceramic varieties typical of IIIB–IV (including gris conical bowls) form part of the ceramic complex of early Monte Albán V or the Early Postclassic in the Valley of Oaxaca.

The ceramic complex known from Monte Albán's Tomb 7 and tombs at Zaachila (Gallegos Ruiz, 1978), which is composed almost entirely of thin, finely burnished G-3Ms, serpent supports, polychromes, and associated wares, may not have been present in the region until the late 13th or early 14th century and later (Lind, 1994b; Markens, 2004, pp. 237–238; see also Brockington, 1973, p. 60; Marcus & Flannery, 1990, p. 199). As with Monte Albán IIIB and IV, there may be relatively few ceramic diagnostics indicative of early Monte Albán V alone, and those varieties may be relatively rare in these assemblages (Markens, 2011).

These long-enduring chronological issues have remained such an impediment for understanding the processes associated with the decline of Monte Albán and the subsequent reorganization of the valley, in part, because of the relatively low number of published absolute dates for the later phases of the pre-Hispanic era. An analysis of several syntheses by Robert Markens (2008, 2011) and a series of compilations of $^{14}C$ dates (Drennan, 1983; Winter, 1994; Martínez López et al., 2000; Markens et al., 2010) indicates that there are only 42 published $^{14}C$ assays from pertinent regional contexts for the roughly 1,200-year period from the onset of Monte Albán IIIA until the Spanish Conquest (Table 9.4). These dates come from 11 different sites, so only in a few cases are there more than a small number of dates per site, limiting the chronological information that can be derived from those observations. About half those dates come from IIIB–IV contexts, and the other half pertain to Monte Albán V. All the dates for early V are from contexts in eastern Tlacolula, a piece of information we return to later.

FIG. 9.10. Miniature café vessels in Saville's ceramic collections from the cruciform tomb at Guirún (permission granted by American Museum of Natural History, photo by Linda Nicholas).

## Valley of Oaxaca Settlement Patterns in Later Pre-Hispanic Times

The above review of chronological issues that have hampered our interpretations of the later pre-Hispanic history

FIG. 9.11. Tomb in Matatlán with *greca*-style stonework.

FIG. 9.12. Pottery from tomb in Matatlán.

of the Valley of Oaxaca leads us to reconsider the regional survey data collected for the Classic and Postclassic periods in Valley of Oaxaca by Blanton (1978; Blanton et al., 1982), Kowalewski (Kowalewski et al., 1989), and others, including ourselves. Our chronological reassessment underpins the scenario that we offer at the end of this chapter for the decline of Monte Albán and the subsequent reorganization of the valley. More specifically, it leads us to offer a new regional perspective on population change in the Valley of Oaxaca that both adheres to the original empirical findings of the survey and addresses issues raised as chronological findings have been amplified and reconsidered (e.g., Lind, 1994a; Markens, 2004, 2008).

When the regional surveys were originally implemented in the mid-1970s, the chronology for the Classic and Postclassic periods was a matter of debate, as it remains today. At the time, there was only one $^{14}C$ date pertaining to the later Classic period from Monte Albán (Markens, 2004, p. 77). For

TABLE 9.4. Classic and Postclassic radiocarbon dates for the Valley of Oaxaca.

| Sample no. | Site | Ceramic phase | Uncalibrated $^{14}C$ age | ± | Calibrated* (1 sigma) | Calibrated (2 sigma) | Reference |
|---|---|---|---|---|---|---|---|
| Beta-63235 | Monte Albán | Monte Albán IIIA | AD 200 | 70 | AD 219–392 | AD 88–429 | Winter, 1994 |
| TX-1815 | Monte Albán | Monte Albán IIIB | AD 740 | 100 | AD 692–940 | AD 657–1001 | Drennan, 1983 |
| Beta-63236 | Monte Albán | Monte Albán IIIB–IV early | AD 500 | 60 | AD 561–655 | AD 438–681 | Winter. 1994 |
| M-2096 | Guilá Naquitz | Monte Albán IIIB–IV | AD 620 | 130 | AD 603–875 | AD 439–980 | Drennan, 1983 |
| SI-514 | Guilá Naquitz | Monte Albán IIIB–IV | AD 740 | 40 | AD 779–878 | AD 691–944 | Drennan, 1983 |
| M-2105 | Hierve el Agua | Monte Albán IIIB–IV | AD 940 | 100 | AD 900–1159 | AD 781–1237 | Drennan, 1983 |
| I-15,921 | Monte Albán | Monte Albán IIIB–IV | AD 710 | 80 | AD 691–878 | AD 658–976 | Winter & Herrera Muzgo, 2000 |
| I-15,920 | Monte Albán | Monte Albán IIIB–IV | AD 750 | 80 | AD 694–944 | AD 675–984 | Winter & Herrera Muzgo, 2000 |
| TX-1814 | Monte Albán | Monte Albán IIIB–IV | AD 600 | 80 | AD 624–772 | AD 551–877 | Drennan, 1983 |
| TX-1816 | Monte Albán | Monte Albán IIIB–IV | AD 720 | 80 | AD 697–884 | AD 663–971 | Drennan, 1983 |
| Beta-205982 | Lambityeco | Monte Albán IIIB–IV | AD 450 | 60 | AD 443–640 | AD 432–649 | Markens, 2008 |
| Beta-205983 | Lambityeco | Monte Albán IIIB–IV | AD 520 | 70 | AD 544–663 | AD 436–763 | Markens, 2008 |
| Beta-205985 | Lambityeco | Monte Albán IIIB–IV | AD 560 | 40 | AD 620–674 | AD 564–759 | Markens, 2008 |
| GX-1480 | Lambityeco | Monte Albán IV | AD 640 | 100 | AD 642–861 | AD 544–962 | Drennan, 1983 |
| GX-1481 | Lambityeco | Monte Albán IV | AD 1055 | 95 | AD 1037–1215 | AD 987–1283 | Drennan, 1983 |
| GX-1482 | Lambityeco | Monte Albán IV | AD 690 | 100 | AD 675–877 | AD 620–983 | Drennan, 1983 |
| GX-1573 | Lambityeco | Monte Albán IV | AD 755 | 90 | AD 719–958 | AD 668–996 | Drennan, 1983 |
| I-2679 | Lambityeco | Monte Albán IV | AD 720 | 100 | AD 689–890 | AD 648–996 | Drennan, 1983 |
| I-3257 | Lambityeco | Monte Albán IV | AD 730 | 100 | AD 689–894 | AD 653–1000 | Drennan, 1983 |
| I-3258 | Lambityeco | Monte Albán IV | AD 700 | 95 | AD 686–879 | AD 642–982 | Drennan, 1983 |
| M-1151 | Yagul | Monte Albán IV–V trans. | AD 890 | 150 | AD 782–1157 | AD 685–1244 | Drennan, 1983 |
| Beta-205984 | Lambityeco | Monte Albán V early | AD 940 | 60 | AD 977–1156 | AD 894–1181 | Markens, 2008 |
| Beta-205986 | Lambityeco | Monte Albán V early | AD 920 | 30 | AD 990–1022 | AD 902–1148 | Markens, 2008 |
| Beta-205987 | Xaagá | Monte Albán V early | AD 920 | 70 | AD 898–1153 | AD 783–1206 | Markens, 2008 |
| Beta-205989 | Xaagá | Monte Albán V early | AD 880 | 40 | AD 901–1017 | AD 894–1021 | Markens, 2008 |
| Beta-205990 | Xaagá | Monte Albán V early | AD 1160 | 60 | AD 1192–1284 | AD 1044–1378 | Markens, 2008 |
| M-2091 | Cueva Blanca | Monte Albán V | AD 620 | 130 | AD 603-875 | AD 439–980 | Drennan, 1983 |
| SI-510 | Cueva Blanca | Monte Albán V | AD 1430 | 50 | AD 1331–1439 | AD 1304–1456 | Drennan, 1983 |
| M-2095 | Guilá Naquitz | Monte Albán V | AD 1710 | 100 | AD 1494–1948 | AD 1474–1950 | Drennan, 1983 |
| SI-513 | Guilá Naquitz | Monte Albán V | AD 1270 | 80 | AD 1274–1394 | AD 1212–1420 | Drennan, 1983 |
| M-1251 | Mitla | Monte Albán V | AD 840 | 110 | AD 781–1019 | AD 686–1158 | Drennan, 1983 |
| GX-1614 | Pasa a Carrera | Monte Albán V | AD 835 | 95 | AD 782–1017 | AD 687–1156 | Drennan, 1983 |
| M-1248 | Yagul | Monte Albán V | AD 1200 | 100 | AD 1163–1387 | AD 1039–1404 | Drennan, 1983 |
| M-1249 | Yagul | Monte Albán V | AD 1380 | 100 | AD 1301–1429 | AD 1251–1622 | Drennan, 1983 |
| M-1250 | Yagul | Monte Albán V | AD 1580 | 100 | AD 1445–1635 | AD 1329–1947 | Drennan, 1983 |
| Beta-66503 | Monte Albán | Monte Albán V | AD 1320 | 50 | AD 1299–1393 | AD 1286–1406 | Winter, 1994 |
| Beta-138612 | Zimatlan | Monte Albán V | AD 1250 | 40 | AD 1273–1384 | AD 1245–1393 | Herrera Muzgo & Winter, 2003 |
| GX-1704 | Mitla Fortress | Monte Albán V late | AD 1385 | 85 | AD 1304–1426 | AD 1276–1486 | Drennan, 1983 |
| Beta-257304 | Macuilxochitl | Monte Albán IIIB | AD 680 | 40 | AD 688–777 | AD 664–870 | Markens, 2011 |
| Beta-205980 | Macuilxochitl | Monte Albán V late | AD 1390 | 40 | AD 1322–1422 | AD 1303–1433 | Markens, 2008 |
| Beta-205988 | Xaagá | Monte Albán V late | AD 1200 | 50 | AD 1224–1293 | AD 1164–1386 | Markens, 2008 |
| Beta-205991 | Xaagá | Monte Albán V late | AD 1580 | 50 | AD 1453–1626 | AD 1443–1637 | Markens, 2008 |

* University of Washington, Quaternary Isotope Lab, Radiocarbon Calibration Program Rev. 4.3.

Classic and Postclassic periods, the regional survey relied mostly on the published chronological assignments of Caso, Bernal, Paddock, and others (Paddock, 1966; Caso et al., 1967; Paddock et al., 1968). The ceramic assemblage at Atzompa, which was similar to the assemblage at Monte Albán when that site was at its height, was considered to be indicative of Monte Albán IIIB (Kowalewski et al., 1989, pp. 251–252; Marcus & Flannery, 1990, p. 195). Key elements of the Monte Albán IV complex, such as imitation Fine Orange and full-body molded café figurines, were found more frequently at Lambityeco than Monte Albán. Following Paddock (1983a; Paddock et al., 1968), the chronology for the regional surveys contrasted the principal ceramic complex at Atzompa with the Lambityeco complex as the basis for distinguishing Monte Albán IIIB from IV (Kowalewski et al., 1989, pp. 251–252). Nevertheless, during the survey (Blanton, 1978), a Monte Albán IV component also was defined at Monte Albán albeit smaller than the IIIB occupation. During the field survey, the application of this chronological model produced settlement maps for these two phases with clear spatial distinctions. Most but not all IIIB-like pottery was found in Etla and the central part of the valley, and much of the IV-like ceramics was recorded in Tlacolula and the Valle Grande (Kowalewski et al., 1989, maps 6 and 7; Blanton et al., 1993, figs. 3.17 and 3.19).

More recently, based on additional $^{14}C$ dates from Monte Albán, chronological overlap has been found between Classic period sectors of that site and some of the dates from the excavated palaces at Lambityeco (Martínez López et al., 2000, pp. 3–4). Although this overlap in itself is not at odds with the findings from the regional survey, the relative lack of overlap between the IIIB and IV settlement patterns has raised questions (e.g., Lind, 1991–1992). At the same time, $^{14}C$ dates from our excavations at El Palmillo (Fig. 9.6) and Ejutla (Fig. 9.7) indicate that both sites had a significant occupation in Monte Albán IIIB (ca. AD 500–650, or early IIIB–IV). These findings are not entirely consistent with earlier survey estimates that had large occupations at both sites only in IIIA and IV.

In response to these issues, some scholars (Lind, 1994a; Markens, 2004) have proposed simply merging the survey populations from these two phases, which they believe pertain to the period between AD 500–600 and AD 800–900. To evaluate this alternative, it is necessary to understand a bit about the mechanics of regional survey. A necessary prerequisite is a published ceramic chronology that has been evaluated through the scientific review process. The nature of chronological variation in the pottery needs to be sufficiently significant that it can be applied to surface collections. Minor differences in form or designs that can be discerned in complete (or almost complete) vessels or in large collections recovered in excavations may not be sufficiently visible in the much lower number of usually small sherds in surface collections.

During a regional survey, the presence, absence, spatial distribution, and observed abundance of key diagnostic ceramic varieties or horizon markers on the ground and in collections serve as the basis to date or define the spatial extent of sites during each phase. As with all surveys, the assignment of specific diagnostics or horizon markers exclusively to a certain phase is somewhat arbitrary, as the pace of ceramic change is likely more gradual with less stark divisions than indicated by the ceramic chronologies that we employ (cf. Markens, 2008). We already have argued that some of the key diagnostics of Monte Albán IV (or late IIIB–IV), such as G-35 vessels and full-body molded café figurines, may have continued to be used in declining quantities into the 13th century. The temporal assignment of specific diagnostics to certain chronological phases remains more problematic in the Valley of Oaxaca given the low frequencies of diagnostic ceramics and the rarity of published contexts where chronometric dates and well-described ceramic assemblages co-occur.

With this background, a combined IIIB–IV settlement pattern map might be considered a composite or maximal picture of Late Classic period Oaxaca. Clearly, with the more recent discoveries of significant early IIIB–IV occupations at El Palmillo and Ejutla that are not reflected in the settlement maps and $^{14}C$ dates for early V from Lambityeco, some modification of the demographic profile of the valley during the Late Classic and Early Postclassic is necessary. But there are serious problems with simply collapsing IIIB and IV into one phase. Such a move would clearly merge the settlement picture for a time block that initially was thought to have lasted as long as 700–800 years (ca. AD 500–1250), much longer than any other Valley of Oaxaca phase. Accepting the new time frame of ca. AD 500–600 to AD 800–900 (Lind, 1994a; Markens, 2004) leaves us with a several-hundred-year gap until ca. AD 1100–1200 in early Monte Albán V with no apparent regional population (Winter, 1989) or, conversely, with a very long and stable period (Monte Albán V) in which populations rose rapidly at its start and then were largely stationary for centuries. The latter reconstruction now appears to contradict historical sources that provide a picture of a much more dynamic landscape of factionalism, endemic fighting, and large-scale in-migrations, especially after AD 1350 (Oudijk, 2002, p. 75).

The proposed composite IIIB–IV settlement model also does not permit us to take full advantage of the findings of the regional survey. The proponents of the combined model seem to believe that the IIIB and IV ceramic complexes simply represent contemporaneous spatial variation. Yet that view ignores ample evidence that there is a temporal component to the relationship between these complexes as well. Although there very likely is some temporal overlap of IIIB and IV in the Valley of Oaxaca, there clearly are diagnostics of IV that extend centuries later in time (Brockington, 1973; Bernal & Gamio, 1974; Winter, 1997), while the archetypical Monte Albán Classic period gris ceramic urns and ceramics equivalent to Classic period Atzompa do not. For example, one key diagnostic that served to define Monte Albán IV during the settlement pattern study is imitation Balancán (Z) Fine Orange, dated elsewhere to well after Monte Albán IIIB (Marcus & Flannery, 1990, p. 199). In point of fact, no examples of this variety were collected from sites in Etla (where little Monte Albán IV was defined during the survey). In contrast, various examples were noted at sites located in most other valley subregions but especially in Tlacolula (Fig. 8.10). Fine Orange also has been found to the south in the Ejutla Valley (Feinman & Nicholas, 1990a, p. 239) and in Miahuatlán (Brockington, 1973; Markman, 1981, pp. 101, 164). Imitation Fine Orange has been recorded only in a restricted part of Monte Albán (Blanton, 1978, fig. 4.37) and does not spatially correspond with the greatest expansion of the site in IIIB. The distribution of Fine Orange at Monte Albán is not what would be expected if that variety of pottery were present when the capital was at its height. Rather, Fine

Orange occurs more frequently in Tlacolula and other valley peripheries (including Ejutla) that likely were the first areas of the region to break away when Monte Albán began to decline (Paddock et al., 1968, p. 3; Paddock, 1983c, p. 188). That the innovation of new ceramic varieties, including a new class of figurines, occurred more abundantly outside Monte Albán leads us to consider whether the capital was already in decline when the new varieties began to appear. These findings do not imply that we never expect to find imitation Fine Orange at Etla sites, nor does it rule out alternative interpretations of the survey findings, but it does lead us to look for an alternative perspective on those findings that both recognizes our empirical observations from the survey and does not simply lump these complexes into a single undifferentiated phase.

Another process, ceramic conservatism, also can confound our ceramic chronologies. During the survey of the Ejutla Valley, we found almost no ceramics that we could confidently say were IIIB (explicitly comparable to Aztompa). At many sites with IIIA diagnostics, we found either IV diagnostics or ceramics that could be attributed more broadly only to IIIB–IV. We proposed that in outlying areas such as Ejutla, some ceramic varieties typically considered to be diagnostic of Monte Albán IIIA (generally dated between AD 300 and AD 500) may have continued somewhat later in time than they did at the core of the Valley of Oaxaca (Feinman & Nicholas, 2001, p. 142; see also Elson, 2011). Subsequently at El Palmillo, we excavated an offering (Offering 18) on Terrace 925 that included a ceramic vessel that typically would be considered IIIA, but it came from an excavated context that postdates AD 500 (cal. AD 540–655; NSF Arizona AMS Facility, sample AA68531). The vessel in this offering is an amarillo G-23 (or A-8; Caso et al., 1967, fig. 56) medium hemispherical bowl with thin, shallow carved lines (Fig. 9.13). Excluding the disturbed upper layer on each terrace, we recovered over 1,000 similar carved sherds (G-23s and A-8s) at El Palmillo. Roughly 50% of these are from contexts that postdate AD 500, and there is a clear pattern that vessels with thin, shallow carved lines (like the bowl in Offering 18) became more prevalent through time, while vessels with deeper carving and thicker lines became less abundant. Based on these findings, it would appear that some pottery varieties that would be considered Monte Albán IIIA diagnostics actually continued to be used into early IIIB, at least in peripheral areas of the valley.

FIG. 9.13. G-23 bowl with light carving from Terrace 925 at El Palmillo.

We have looked at these data from recent excavations and reconsidered earlier studies with an eye toward chronological issues and their implications for the regional survey. Because of the dearth of horizon markers for the Late Classic and Early Postclassic in the Valley of Oaxaca and their artificial placement into discrete phases, we see three potential problems that affect the regional survey. First, as we just noted, some pottery varieties traditionally considered IIIA may have continued into early IIIB in some parts of the valley. Second, although some key Monte Albán IV diagnostics clearly went later in time than what is usually considered to be IIIB, there is some overlap between the IIIB and IV ceramic complexes. Third, early Monte Albán V may have been missed (or rarely noted) during the surveys because that complex included some G-35s along with variants or early forms of G-3Ms. With this new perspective on the ceramic chronology for the Valley of Oaxaca, we reconsidered the regional settlement data and provide a heuristic adjustment or slight modification based on these new data.

In the original published settlement pattern maps for Classic–Postclassic period Valley of Oaxaca, three basic spatially defined patterns are evident (Kowalewski et al., 1989, maps 5–8; Blanton et al., 1993, figs. 3.16, 3.17, 3.19, and 3.21; Fig. 9.14). As mentioned earlier, in the Central and Etla subareas, the population was large in IIIB, declined in IV, and then partially recovered in Monte Albán V. In Tlacolula, the population was large in Monte Albán IIIA, declined in IIIB, recovered in IV, and expanded further in Monte Albán V. In the Valle Grande, the population was very large in IIIA, was much reduced in both IIIB and IV, and then recovered in Monte Albán V. We found similar patterns during subsequent surveys of areas at the valley's edges; the pattern for southern Valle Grande is very similar to the neighboring Ejutla Valley (Feinman & Nicholas, 1990a), while our findings in the Albarradas region (Feinman & Nicholas, 1999) basically parallel the pattern for adjacent eastern Tlacolula. These correspondences are significant, as they indicate that the underlying empirical trends that were recorded in the field observations are consistent. At the same time, the numerical dates assigned to these phases are not strongly grounded in evidence, and the sharpness of the breaks between phases is overstated (see also Lind, 2008, pp. 171–172).

With the expanded number of $^{14}C$ dates from Classic and Postclassic contexts in Oaxaca, new knowledge from excavations regarding the temporal span of diagnostic ceramic varieties or horizon markers, and the proposed modifications of the ceramic chronology discussed above in hand, we engaged in a heuristic exercise to review changes in site sizes and their distributions over the chronological sequence for all multicomponent Classic–Postclassic sites recorded during the regional surveys in the Valley of Oaxaca, the Ejutla Valley, and the Albarradas area. As we noted above, this reconsideration is necessary because of the sparsity of recognized diagnostics or horizon markers when we did the original surveys. We believe that the new ceramic information derived from our own excavations and a reconsideration of information from Yagul (Bernal & Gamio, 1974) and Miahuatlán (Brockington, 1973) allows us to refine or adjust our original data in a way that produces a revised scenario consistent with the original survey findings and also more in accord with excavation data from across the valley. In this heuristic exercise, we examined the settlement data for every site that was occupied for more than one phase during Monte Albán IIIA through V, which involved just over 2,700 site components, or

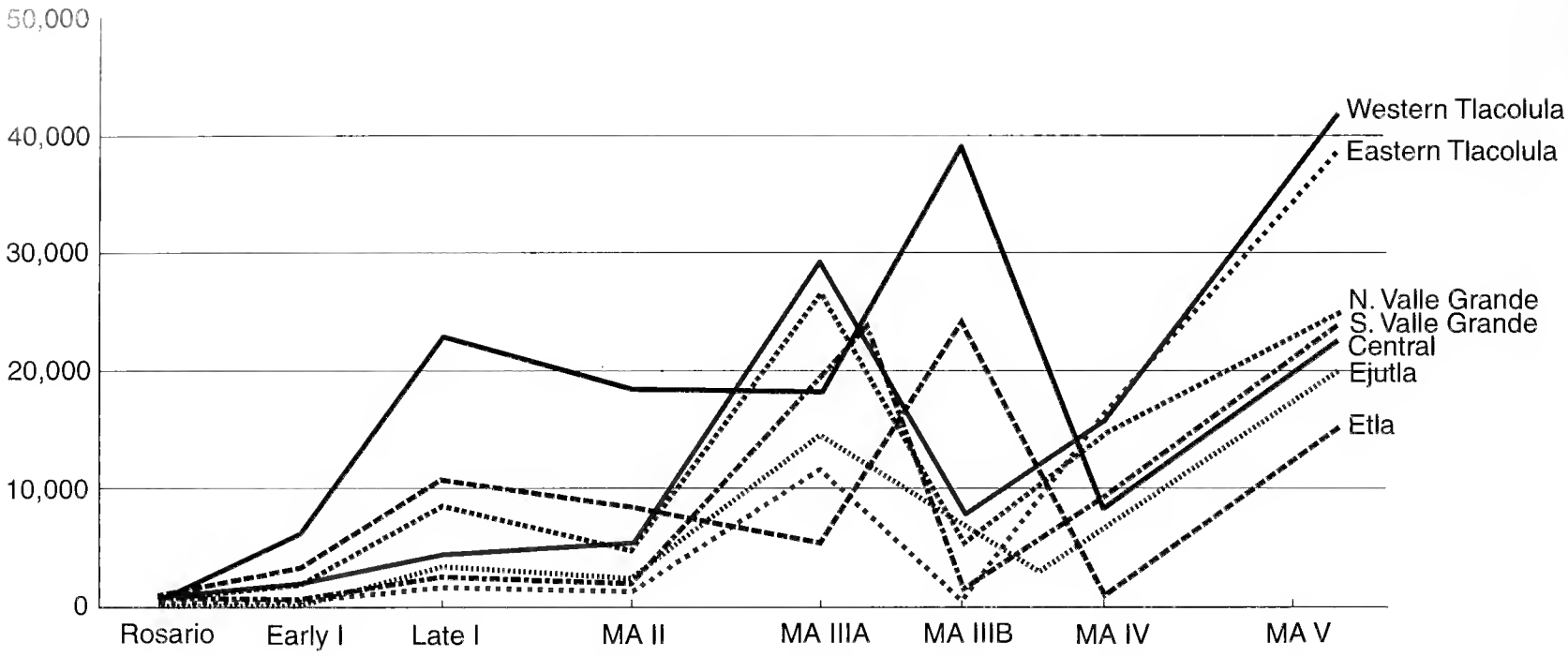



FIG. 9.14. Original population graph for Ejutla and Valley of Oaxaca subregions.

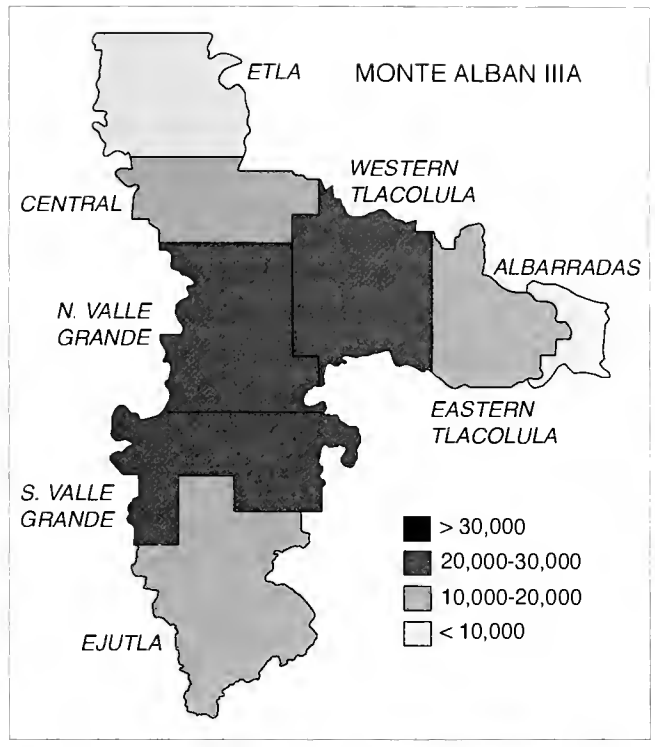
52% of the sites dated to those phases. We did not make adjustments for any single-component sites, nor, in general, did we make changes to the estimated populations as presented in the original survey data. Rather, we systematically made adjustments to the sizes of these settlements for interim phases. To make it clear that we are referring to adjusted populations and not the original survey data, we use early IIIB–IV and late IIIB–IV (instead of IIIB and IV) and early V. For the most part, for Etla and Central, this procedure resulted in adjusted populations for late IIIB–IV and early V. For Tlacolula, the Valle Grande, Ejutla, and Albarradas, we arrived at adjusted populations for early IIIB–IV and early V. We also made adjustments for three sites in eastern Tlacolula—El Palmillo, the Mitla Fortress, and Guirún—where we refined our estimates based on the implementation of more intensive site surveys (Feinman & Nicholas, 2004a).

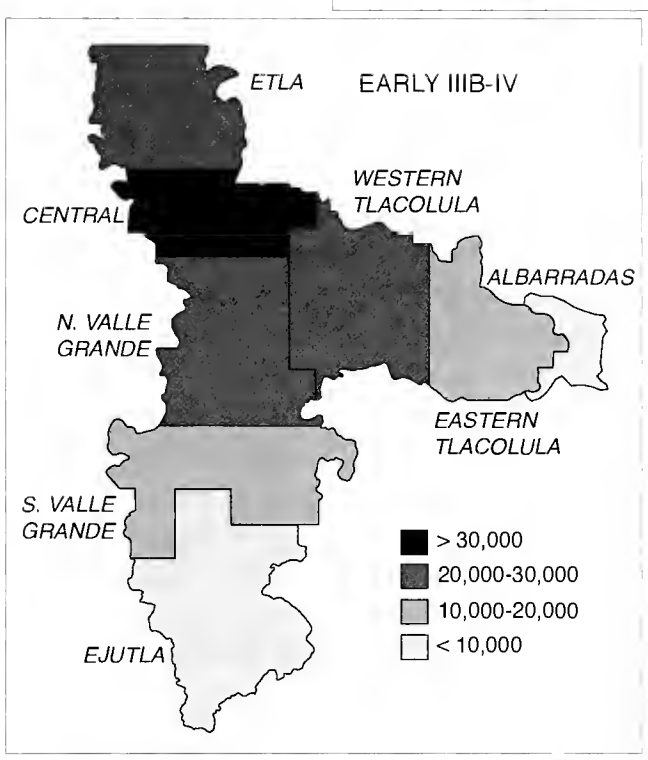
The result is a revised population picture for Monte Albán IIIA, early IIIB–IV, late IIIB–IV, early V, and late V that adheres closely to the overall findings of the original survey data at the same time that it presents a settlement record consistent with findings and $^{14}C$ dates obtained from excavations (Fig. 9.15). Based on this adjusted demographic profile, we see that the population decline at the end of the Classic period was more gradual and prolonged than indicated by other interpretations while also pointing to a significant demographic growth episode across the entire valley during the latter half of the Postclassic period (Fig. 9.16). Renewed growth began earlier in more peripheral parts of the valley—Tlacolula and Ejutla—that were the first to break away from Monte Albán's hegemony during the later Classic. This adjustment also points to the likely demographic importance of the Tlacolula arm in early V (ca. AD 900–1300), a time when the most elaborate civic-ceremonial architecture (Mitla and Yagul) and most of the current $^{14}C$ dates for the region are found in this arm of the valley (Winter, 1989; Markens, 2008).

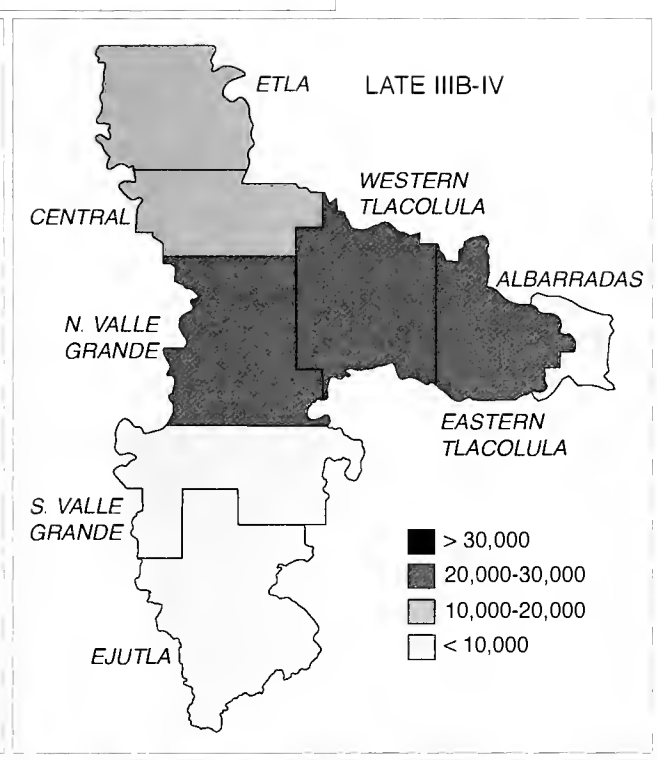
## A Refined Scenario for the Early Classic to Late Postclassic in the Valley of Oaxaca

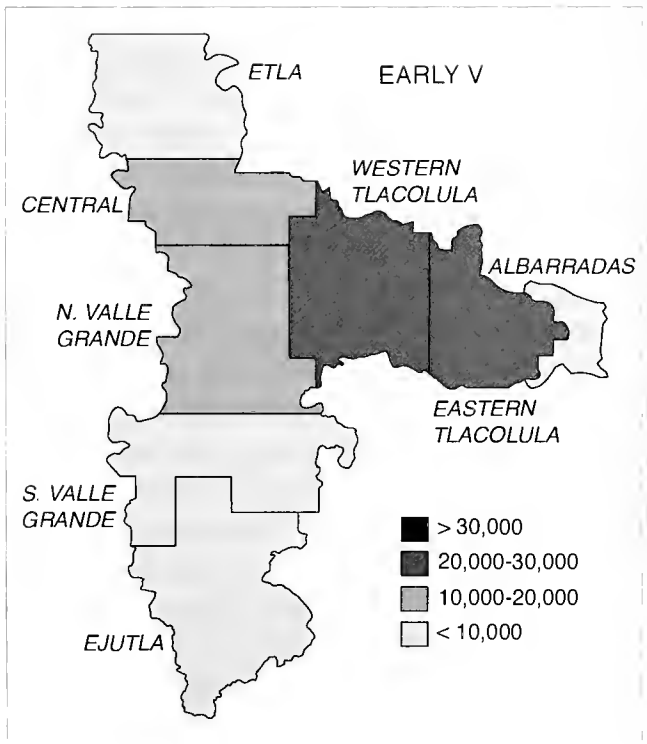
To this point, we have based our discussions on the empirical results from archaeological excavations and surveys. Here we integrate these interpretations with discussions of the region's ethnohistory to outline a scenario for the Classic–Postclassic transition in the Valley of Oaxaca. This scenario draws on the prior interpretations of many researchers. We start this overview in the Middle Classic period (ca. AD 500), when Monte Albán was the political and demographic center of the valley. At that time, the scale of the public architecture at Monte Albán far surpassed that found at any other settlement in the region, and that center also monopolized the ineorporation of writing in civic-ceremonial settings (Marcus, 1989, 1992, 2006). Yet despite this relative centralization of power, leadership was not represented as heavily personalized or dependent on lineage or biography. There are relatively few depictions of leaders or any specific individuals, and a central aspect of civic-ceremonial integration appears to have been achieved through public events that took place in and around plazas, including but not limited to agrarian/fertility rituals in which supernatural figures may have been impersonated (Sellen, 2002, 2011) as well as times when military successes were commemorated. The later themes were a central focus of Monte Albán's earved stone assemblage since the site's foundation.

During the Early/Middle Classic period, large secondary centers emerged, and some of these were distant from Monte Albán at the edges of the Valle Grande and Tlacolula. One of the largest, new secondary centers was San Joaquín in the Ejutla Valley. Perhaps as a consequence, we see important changes in the spatial distribution of power and the manifestation of rule. By late IIIB–IV, Monte Albán no longer maintained a monopoly on written texts, and such texts (found at sites aeross the region) generally depicted powerful individuals. Emphasis was placed on personal biography and the bilateral ancestry of high-status individuals as exemplified by the aforementioned genealogical registers (Marcus, 1992, 2002, 2006; Ureid, 1992, 2003; Urcid et al., 1994; Masson & Orr, 1998; Feinman, 2007). The scenes have been recorded at Monte Albán but also possibly at as many as a dozen other valley sites albeit in different media and presentation formats (Fig. 9.17). In most cases, this information was presented near tombs in a manner where only individuals situated close to the registers, perhaps involved in associated rituals, would see them. Communication was aimed at others of status and likely had much to do with establishing lineage and legitimacy. At



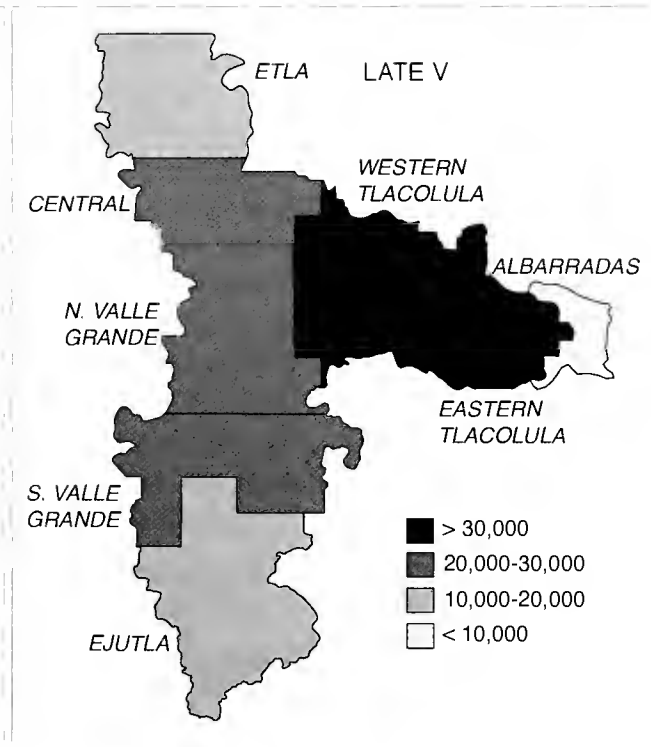




FIG. 9.15. Adjusted populations for Ejutla and Valley of Oaxaca subregions for Monte Albán IIIA through late Monte Albán V.

the same time, the variability of the presentations and the materials on which they were made indicate that these registers were not made in a uniform or centrally directed manner, perhaps suggesting that the leaders of individual sites were devising their own ways of legitimizing their power and position. By the end of the Classic period, the reins of political power had partly diffused from Monte Albán (Winter, 2001, p. 297).

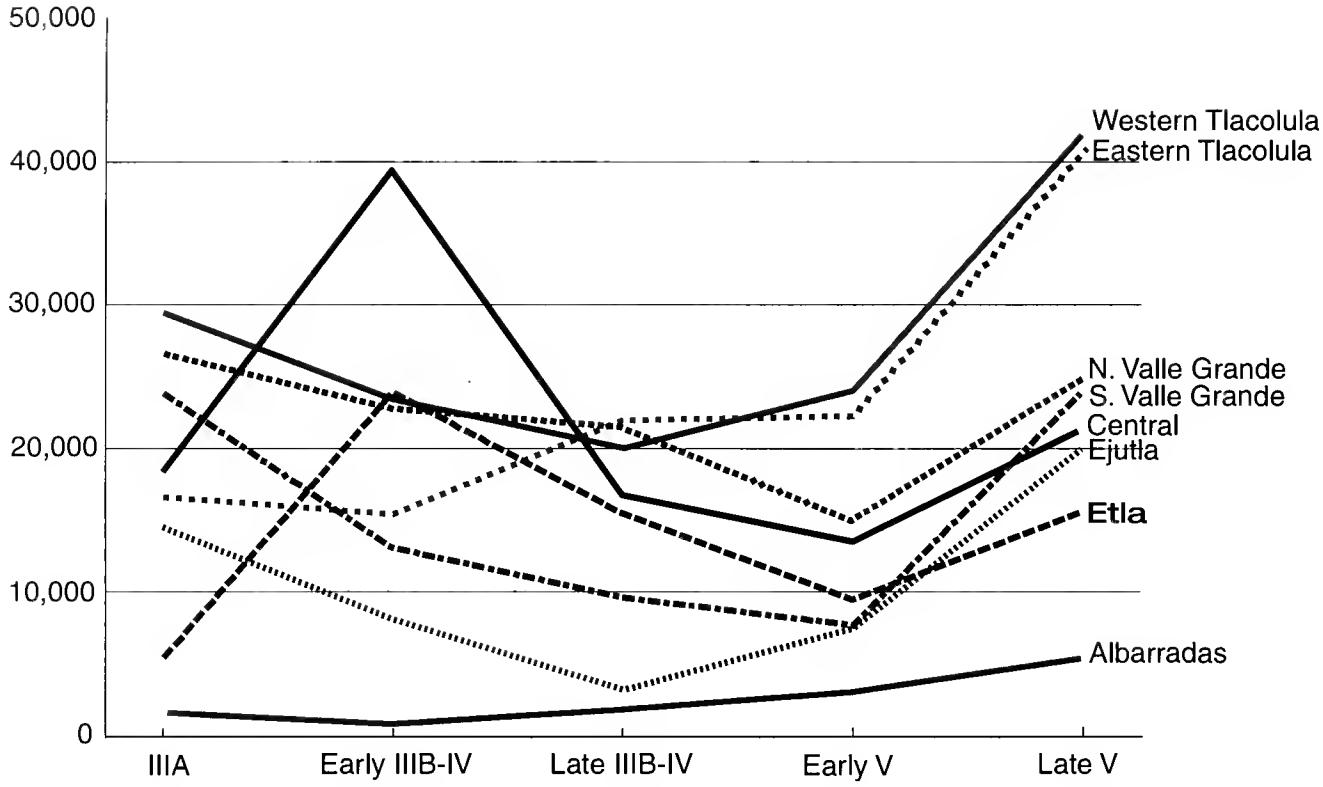



FIG. 9.16. Adjusted population change in Ejutla and Valley of Oaxaca subregions.

With greater emphasis on personal biography and legitimacy, palaces, present in the valley since the end of the Formative period, became a more important form of public architecture during the later Classic. At Monte Albán, the palaces north of the North Platform date late in the Classic period (Winter & Herrera Muzgo, 2000). At El Palmillo, after the Middle Classic period, earlier architecture at the top of the site was leveled to build several palaces, and the number and size of these palaces expanded over time. At that time, the palace architecture at both Lambityeco (Lind & Urcid, 1983; Lind, 2001, 2003) and El Palmillo (Feinman, 2007) was distinguished from the standard Monte Albán plan of a single large patio surrounded by rooms and incorporated multiple patios; the largest of these patios and the associated space likely served civic-ceremonial functions (González Licón, 2004, p. 97; Barber & Joyce, 2006).

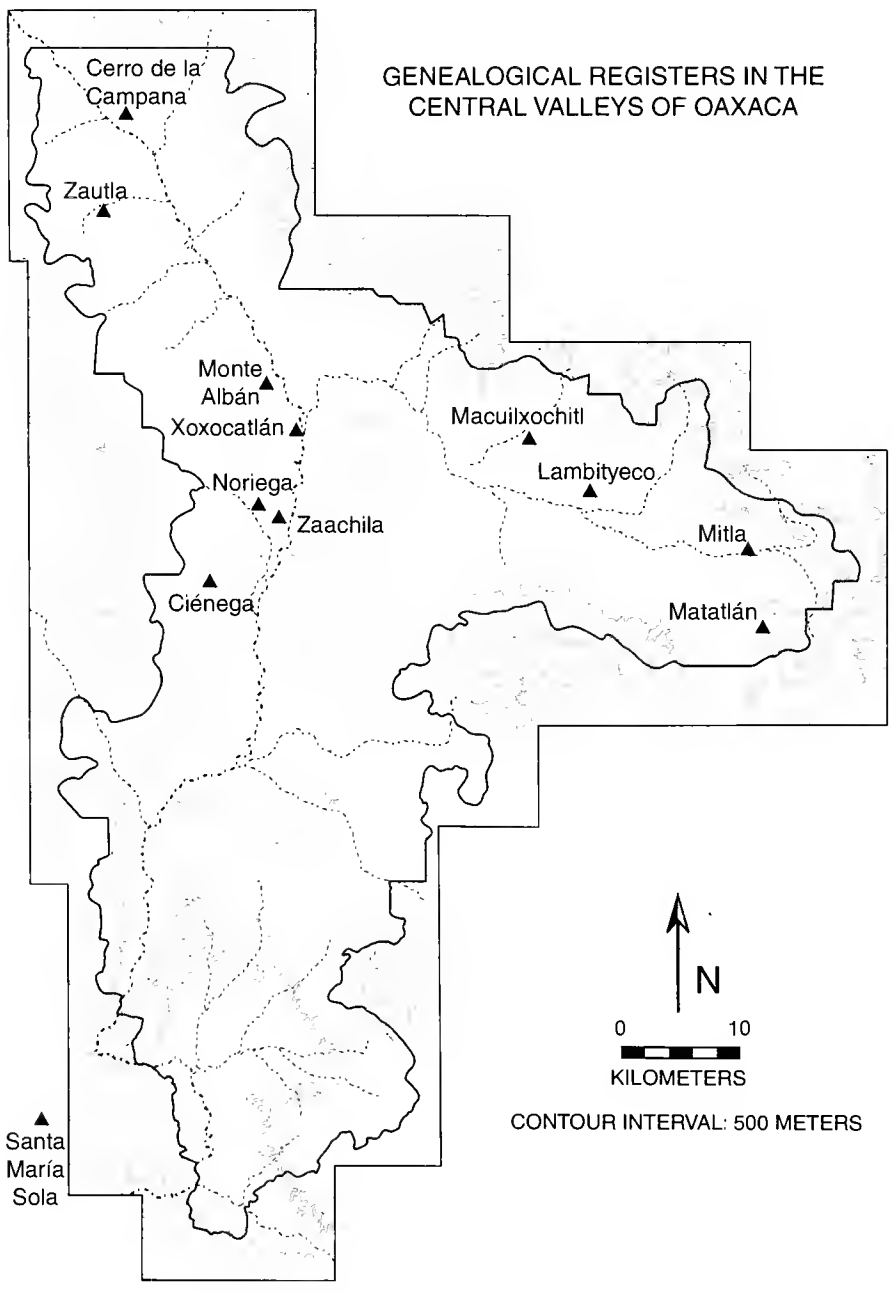



FIG. 9.17. Distribution of genealogical registers in the Central Valleys of Oaxaca.

At first, despite the growing importance of local nobles across the region in late IIIB–IV, horizontal ties between these outlying leaders (Marcus, 2006) and the networks of economic exchange that had been strengthened during Monte Albán's earlier dominance (e.g., Feinman & Nicholas, 2004a) helped retain political and economic integration. But through time, local rulers and settlements began to assert greater autonomy. Assuming that the absolute dates are correct, the process of balkanization may have begun at more peripheral settlements, such as Lambityeco (Paddock, 1978, p. 49, 1983c, p. 188; cf. Winter, 1997, p. 42). Meanwhile, with waning central authority, the long, slow political and demographic decline began at Monte Albán (although occupation and tomb construction continued at the site; Miller, 1995, p. 82).

The decentralization of political influence away from Monte Albán and the vesting of some of that power in local nobles likely means that the period AD 700–1300 was an era of greater instability compared to the prior millennium. As the fortunes of individual leaders and families waxed and waned, followers voted with their feet. Hence, we see clear episodes of growth and decline at Lambityeco, El Palmillo, and other locations where we have excavated data (Fig. 9.1). Just in eastern Tlacolula, the balances of power may have rotated gradually during the Classic and Postclassic periods between Dainzú-Macuilxochitl, Lambityeco, El Palmillo, Yagul, and Mitla (e.g., Flannery, 1983c). Thus, while the occupations of these centers in part overlapped, their relative regional importance shifted over time.

Antagonistic relations likely increased during those times; so it is not surprising that the *Relaciones de Tlacolula* tell of battles in that area between Tlacolula and neighboring Mitla (Horcasitas & George, 1955, p. 17). Likewise, different valley populations established marriage alliances and trade relations with distinct regions outside the valley, notably the well-documented political alliances between the rulers of Zaachila in the Valle Grande and *cacicazgos* in the Mixteca Alta (Oudijk, 2000, pp. 227–229). Recent documentary interpretations that postulate a slow decline for Monte Albán (Oudijk, 2000, p. 227; Jansen & Pérez Jiménez, 2007, p. 130) do not contradict the views reached through this archaeological analysis.

At the same time, we see the Early Postclassic or early Monte Albán V as a time (ca. AD 900–1300) when Mitla, Yagul, and possibly Zaachila were important centers in the valley. Once again, this picture from archaeology is in concert with recent documentary interpretations that postulate that during the Early Postclassic period (AD 1100–1280), there were several centuries when the political center of the Valley of Oaxaca was in eastern Tlacolula, likely at Mitla (Oudijk, 2008). Populations in other sectors of the valley may have declined (Fig 9.15) as they did across much of highland Mesoamerica at that time (Smith, 2002). Tombs continued in use but differed in certain key characteristics from those at Lambityeco and El Palmillo. They could be cruciform in plan, and their facades often were decorated with cut stone *grecas*. Ceramics were transitional between late IIIB–IV and later V. Imitation Balancán Fine Orange as well as Mixteca-Puebla-style polychrome and snake supports were not part of this complex, but both G-35s and G-3Ms were. This perspective on early V pottery would help clarify some of enigmas that have surrounded tombs in Mitla, Zaachila, and Zimatlán (Gallegos Ruiz, 1978; Robles García, 1990; Herrera Muzgo & Winter, 2003, pp. 43–45), yet there is no doubt that the Zaachila Tombs 1 and 2, like Monte Albán Tomb 7, were reused in late V. (We would place the Zimatlán [El Sabino] tomb at the end of early V.)

By AD 900 (or briefly thereafter), the importance of the Zapotec urn, iconic during Monte Albán III–IV, diminished. The loss of the ceramic urns, which often depicted important (but not personalized) individuals impersonating deities, signaled a shift in civic-ceremonial activities. Sometime thereafter, carved stone genealogical registers were no longer produced; however, the painted lintels that decorate the Mitla palaces also relate biographic information for high-status individuals albeit in a different format (Pohl, 1999). In continuation of a trend from late IIIB–IV, palaces, even larger and more elaborate than before (Mitla and Yagul), became the dominant form of public architecture in the Early Postclassic. The association between these palaces and elaborate subterranean tombs was maintained (Saville, 1900, 1909; Caso & Rubín de la Borbolla, 1936; Bernal, 1963). The grandeur and scale of other forms of civic-ceremonial construction may have been less than during the earlier Classic period, but the architectural elaboration of the Mitla and Yagul palaces indicates not that there was a loss of a high-status "great tradition" but that the regional "great tradition" was in transition (cf. Markens et al., 2008).

Sometime around AD 1300, demographic and political power again shifted closer to the middle of the Valley of Oaxaca, although the landscape of competitive *cacicazgos* continued (Oudijk, 2002, p. 75). According to a recent reading (Oudijk, 2008) of documentary accounts, a confederation that included Macuilxochitl, Zaachila, and sites in the Mixteca Alta overthrew the prior power center at Mitla, parts of which shows evidence of having been dismantled and abandoned by late Monte Albán V (Robles García & Juárez Osnaya, 2009, p. 396; see also Esparza, 1983). Archaeologically, Cuilapan and Macuilxochitl became the centers of population and power, while the role of Zaachila, which seems to have only a small late Monte Albán V archaeological presence, remains to be deciphered (Appel, 1982, p. 144). The last centuries of the pre-Hispanic era likely were characterized by many of the trends that we traditionally have associated with the Postclassic period more generally (across highland Mesoamerica), such as rapid population growth, more dispersed patterns of settlement, expanding exchange and interpersonal ties outside the valley, and increasing economic commercialization (Kowalewski et al., 1989; Feinman, 1996; Smith & Berdan, 2003; Markens et al., 2008). Rapid Late Postclassic demographic growth also has been postulated for the Mixteca Alta as well (Kowalewski et al., 2009, p. 317, 2010, p. 81). Some areas in the Valley of Oaxaca, particularly the central and northern parts, may have owed political fealty to Mixtec lords; however, that does not imply a demographic replacement or even the mass in-migration of large numbers of Mixtec peoples into the valley (Byland & Pohl, 1994, pp. 182–184). Across Oaxaca, the growing political focus on powerful individuals was further amplified. The biographies of these individuals were recorded in written texts and carved on bones, and their final resting places were packed with more ornate goods and ornaments than ever seen previously in the Valley of Oaxaca (Caso, 1969; Gallegos Ruiz, 1978). Clearly, by the Late Postclassic period, marked regional- and macroregional-scale changes from the Monte Albán–centric Middle Classic period had occurred, but these shifts did take place rapidly or all at one time.

## Summary

Although the scenario that we offer for the Classic–Postclassic transition is more a provisional model than a final account, our multiscalar reconciliation is consistent with the data derived from survey, excavation, and textual accounts. It also illustrates the robustness of the original survey data, which can be examined and reexamined in new ways as our knowledge of ceramic and other chronological issues advances.

Nevertheless, much additional testing and an added focus on chronometric dating clearly are necessary. We need more examples of Late Postclassic (late Monte Albán V) houses and tombs as well as a clearer archaeological understanding of Zaachila. Nevertheless, the picture that we see now is one that involves important elements of both continuity and change. The interpretation that we have presented recognizes dramatic changes if one looks at the ends of this historical sequence, but we see the intervening shifts as having been cumulative and gradual rather than cataclysmic or catastrophic. For example, we would argue that the shift to more individualizing political structures began during the Middle Classic period and that the roots of Monte Albán's decline started not long after that as outlying leaders and centers amassed greater autonomy, power, and networks of influence. But the dramatic increases in economic specialization, commercialization, and extraregional flows of goods may not have been kicked off until centuries later, perhaps well into the Postclassic period, following an era of economic slowdown or stasis. All the

reliance on gris pottery (Feinman et al., 1989) and the subterranean tombs for at least certain important individuals remained customary practice across this entire era.

If we had simply combined the data and regional settlement maps for Monte Albán IIIB and IV, which results in continuous population growth from the Early Classic to the Late Postclassic, several key aspects of the Classic–Postclassic transition in the Valley of Oaxaca would have been completely missed. For example, you would not see that the collapse of the Monte Albán polity and the decline of a number of large Classic-era centers was a slow process, occurring over an elongated time frame into the Early Postclassic. Our new perspective for the Valley of Oaxaca based on the reexamination of the regional survey data conforms to trends seen more broadly across highland Mesoamerica that significant population increases did not occur until later in the Postclassic (e.g., Sanders et al., 1979; Smith & Berdan, 2003). In addition, one might not recognize that a rather significant shift took place in the region ca. AD 1300, when the influence of earlier Postclassic centers, such as Mitla and Yagul, appears to have been eclipsed. We present a fuller discussion of the Late Postclassic era (late Monte Albán V) in the following chapter.

# Chapter 10: Petty States: Monte Albán V

> What makes the concept of society so deceptive is that we assume the world is organized into a series of compact modular units called "societies," and that all people know which one they're in. Historically, this is rarely the case. Imagine I am a Christian-Armenian merchant living under the reign of Genghis Khan. What is "society" for me? Is it the city where I grew up, the society of international merchants (with its own elaborate codes of conduct) within which I conduct my daily affairs, other speakers of Armenian, Christendom (or maybe just orthodox Christendom), or the inhabitants of the Mongol empire itself, which stretched from the Mediterranean to Korea? Historically, kingdoms and empires have rarely been the most important reference points in peoples' lives.
>
> (Graeber, 2010, p. 66)

The Postclassic was a time of comparatively rapid demographic growth across highland Mesoamerica. In highland Oaxaca, demographic increase was significant and widespread, and populations were spread more evenly across the region than ever before, not only in the Valley of Oaxaca (Kowalewski, 1990b, p. 42, 2003a, p. 317, 2003c, p. 9; Blanton et al., 1993, p. 99; Feinman, 1998, p. 115) but also in the Ejutla Valley (Feinman & Nicholas, 1990a, 1992a), the Sola Valley (Balkansky, 2002), the Cañada de Cuicatlán (Redmond, 1983), the Mixteca Alta (Balkansky et al., 2000; Kowalewski et al., 2009, 2010), and intervening mountainous zones (Drennan, 1989; Finsten, 1996; Fig. 10.1). As populations rebounded and reorganized following the disruptions associated with the decline of major Classic period centers, the entire region was at first fragmented politically into a network of small, semiautonomous polities that stretched from the Mixteca Alta to the Valley of Oaxaca and south to the Pacific Coast. These small states had fluid and changing boundaries, formed larger alliances and confederations that often were ephemeral (Spores, 1974; Pohl, 2003), and were economically interdependent. The dynamic relationships among them are described in ethnohistoric accounts that detail competition and shifting alliances (military and marriage) between these small, late pre-Hispanic Oaxacan polities (Spores, 1967; Paddock, 1983e; Pohl, 2003).

There was no single dominant center in the Valley of Oaxaca during the Postclassic (Monte Albán V); population expanded at many levels of the settlement hierarchy so that not only were there many more small sites, but also a significant proportion of the population resided in urban places of roughly 1,000 or more (Kowalewski et al., 1989, table 10.2). By the Late Postclassic, these larger communities were the head towns of more than 15–20 small, semiautonomous petty kingdoms, or *cacicazgos* (Kowalewski et al., 1989, p. 344; Kowalewski, 1990b, p. 42; Feinman, 1998, p. 115, 2001, p. 365; Fig. 10.2). Many of these small polities had their beginnings in the small settlement clusters that formed in the Valleys of Oaxaca and Ejutla during the waning hegemony of Monte Albán at the end of the Classic period (Feinman, 1998). These later polities had populations ranging between 2,000 and 24,000, nowhere near as large as the expansive Monte Albán polity had been during the Early to Middle Classic (Table 10.1 and Fig. 10.3). This pattern was repeated across highland Oaxaca; in the Mixteca Alta alone, there were as many as 30 small semiautonomous polities during the Late Postclassic

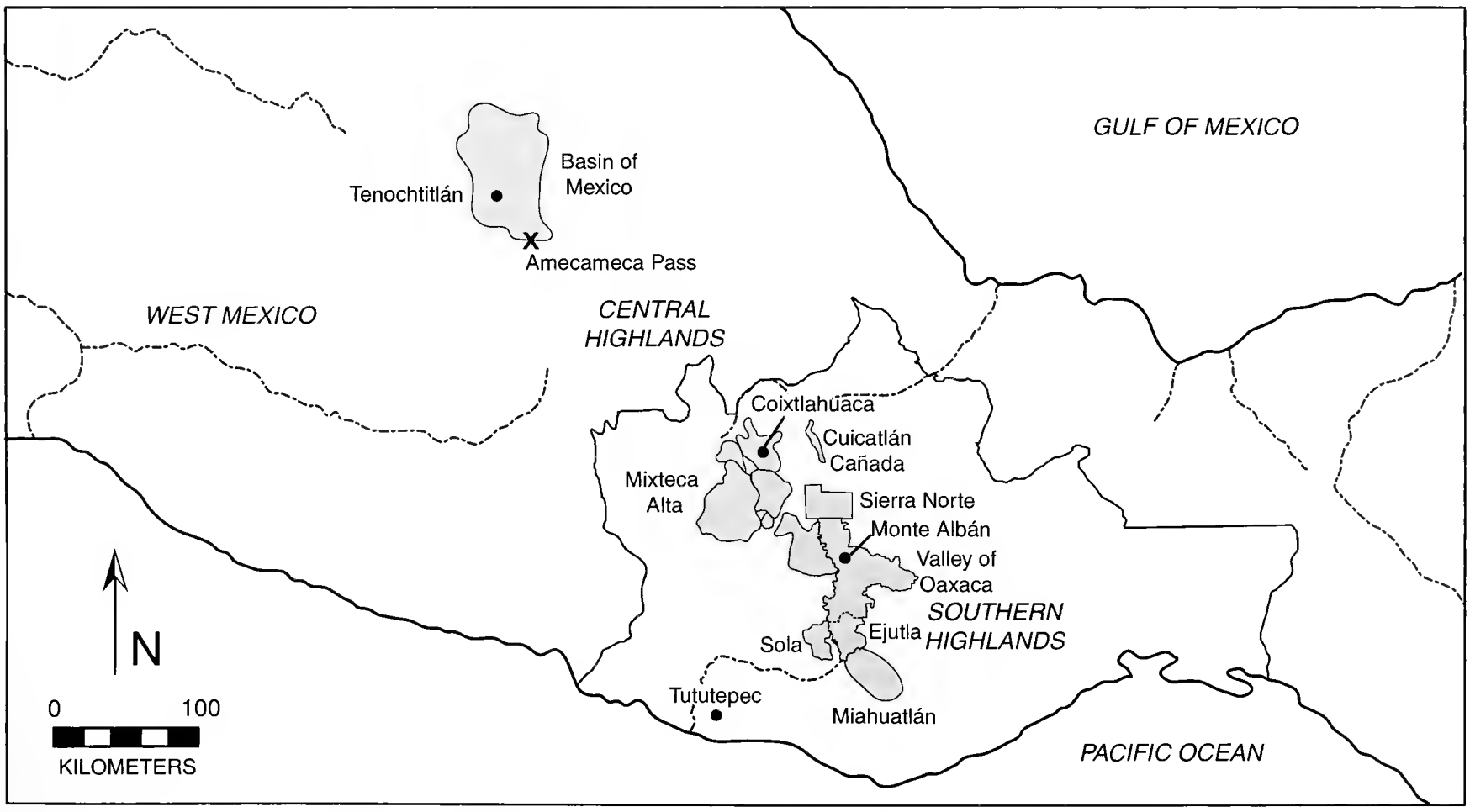



FIG. 10.1. Regions and sites in Oaxaca and central Mexico mentioned in the text.

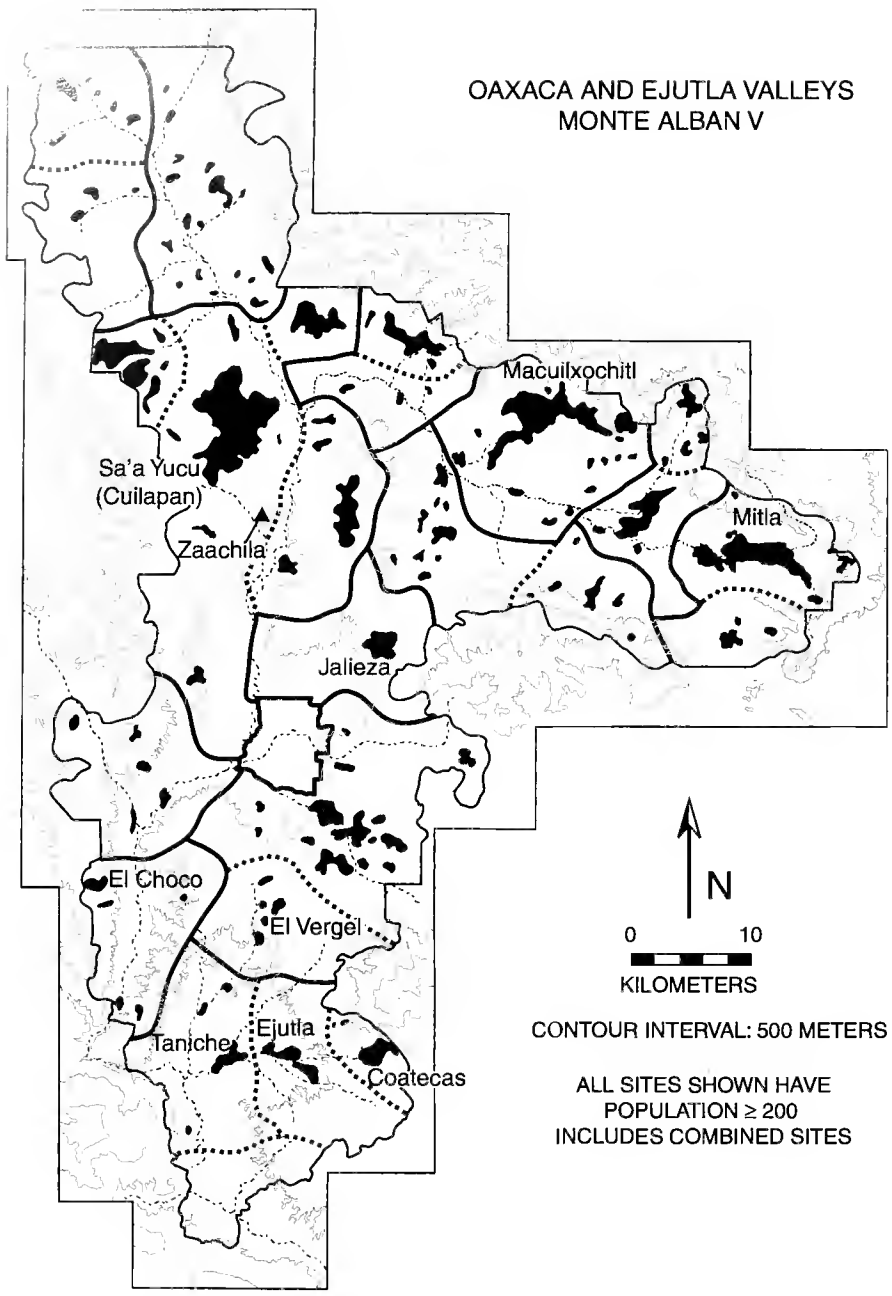



FIG. 10.2. Monte Albán V settlement clusters in Ejutla and the Valley of Oaxaca.

(Table 10.2; Kowalewski et al., 2009). Most were in the size range of those in the Valley of Oaxaca; the largest was Coixtlahuaca in the northern Oaxaca highlands, where a strategically located commercial center became an important nexus for Aztec intrusion/expansion into Oaxaca (Kowalewski et al., 2008, 2010). On the Pacific Coast of Oaxaca, a new large settlement at Tututepec rapidly grew to become the dominant center of an expansive polity that attempted to extend its area of connections and control beyond the coast (Joyce et al., 2004; Levine, 2011; Levine et al., 2011).

In the Basin of Mexico, overall population increased dramatically during the Middle Postclassic (after ca. AD 1150–2000; Berdan & Smith, 2003, p. 240), and small political units proliferated as regional populations were higher than ever before (Sanders et al., 1979; Smith, 1992a, 1996, pp. 60–64, 2003a; Smith & Berdan, 2003, p. 3). In central Mexico, excluding the Aztec capital of Tenochtitlán, a majority of the Late Postclassic polities were small (Smith, 2003b; Carballo & Pluckhahn, 2007, pp. 624–625), many in the size range of the small *cacicazgos* in the Oaxaca highlands (Sanders et al., 1970, pp. 443–462; Bray, 1972) and roughly comparable to estimated population ranges for small states elsewhere in the world (e.g., Pounds, 1969; Renfrew, 1982). Still, there were more and larger centers in the Basin of Mexico at the same time that the settlement hierarchy in the Valley of Oaxaca comprised more middle- and lower-order centers (Kowalewski, 1990b, p. 47; Smith, 2002, fig. 7–20; see also M. E. Smith, 2005). Tenochtitlán was a late exception, dominating

TABLE 10.1. Population of Late Postclassic polities in the Central Valleys of Oaxaca.

| Polity | Shatter zone |
|---|---|
| Coatecas | 3,500 |
| Coyotepec | 4,600 |
| Eastern Etla | 9,900 |
| Ejutla | 4,300 |
| El Choco | 4,200 |
| El Vergel | 4,100 |
| Huitzo | 3,500 |
| Ixtlahuaca | 5,900 |
| Jalieza | 8,800 |
| Macuilxochitl | 23,400 |
| Matatlán | 3,100 |
| Mitla | 23,000 |
| Quialana | 5,700 |
| Sa'a Yucu | 18,800 |
| San Luis Beltrán | 3,000 |
| San Miguel del Valle | 4,200 |
| San Pedro Mártir | 16,600 |
| Taniche | 5,000 |
| Teitipac | 9,300 |
| Tlalixtac | 9,200 |
| Tlapacoyan | 3,300 |
| Tule | 2,500 |
| Yagul/Tlacolula | 8,300 |
| Zautla/Tejalapan | 2,400 |
| Mean size | 7,700 |

| Polity | Centers/ethnohistory |
|---|---|
| Eastern Etla | 9,900 |
| Ejutla | 12,800 |
| El Choco | 4,200 |
| Huitzo | 5,900 |
| Jalieza | 8,800 |
| Macuilxochitl | 23,400 |
| Mitla | 25,900 |
| Sa'a Yucu | 32,300 |
| San Pedro Mártir | 20,700 |
| Teitipac | 15,000 |
| Tlalixtac | 11,700 |
| Tlapacoyan | 3,300 |
| Yagul/Tlacolula | 12,500 |
| Mean size | 14,300 |

the Basin of Mexico and central Mexico to an extent that no Late Postclassic center in highland Oaxaca ever did.

Across Mesoamerica (and excepting the Late Postclassic expansion of the Aztec empire), the shift to smaller polity sizes seemingly was tied to increasing commercialization, an expansion of marketplace exchange, and increasing economic interdependence between autonomous or semiautonomous polities (Kowalewski et al., 1983a, p. 52; Kowalewski, 1990b, 2003b,c; Smith & Berdan, 2000; Berdan et al. 2003a). By commercialization, we mean that more goods and a greater variety of goods were flowing across Mesoamerica through intensified networks of marketplace exchange. Markets are most widely documented for the Aztec and central Mexico (e.g., Díaz del Castillo, 1956, pp. 218–219; López de Gómara, 1966, p. 160; Berdan, 1985, 2003; Lockhart, 1992; Blanton, 1996), where even small settlements had markets (Smith, 2000, p. 588). Yet they clearly were present elsewhere in Mesoamerica when the Spanish arrived (see Berdan et al., 2003b), including Oaxaca (Spores, 1965; Appel, 1982; Pohl et al., 1997; Lind, 2000, p. 573; Feinman, 2001, p. 364; Kowalewski et al., 2010; Levine, 2011, p. 29). In fact, at least for the Basin of Mexico and the Mixteca Alta, all city-states are thought to have had at least one marketplace, all of which were linked in

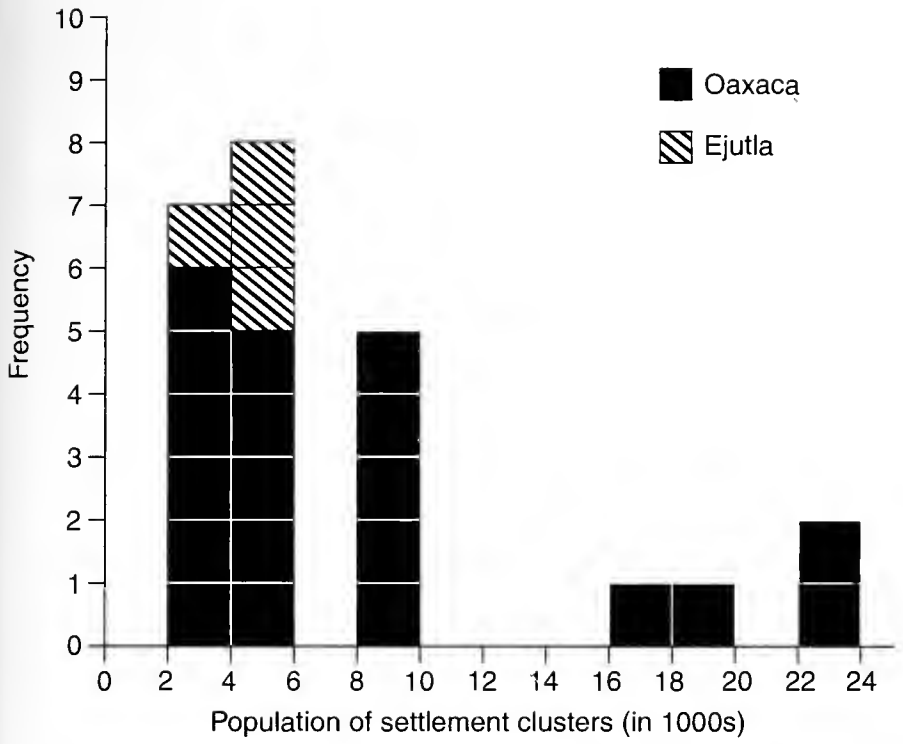



FIG. 10.3. Monte Albán V petty state sizes in Ejutla and the Valley of Oaxaca.

regional marketing systems (Lind, 2000, p. 573; Smith, 2003b, p. 60). Marketplace exchange is postulated to have been present by the Classic period, if not earlier (Blanton, 1983b; Feinman et al., 1984b; Kowalewski, 1990b, p. 48; Blanton et al., 1999, p. 100; Smith, 2002, pp. 320–323; Feinman & Nicholas, 2010a). And yet, the volume and scale of market transfers appears to have been fostered at first with the decline of the large Classic period urban/political centers and then again later by the long-distance political expansions and economic transactions spurred by the Aztecs during the process of empire building (e.g., Berdan, 1977, 1985; Blanton, 1996).

These increased flows were a result of not only larger populations but also changing networks of interaction and exchange. The fall of Teotihuacan, Monte Albán, and other large centers by the end of the Late Classic led to changes in exchange patterns and trade routes as well as an expansive role for sea trade (Kepecs et al., 1994; Braswell, 2003; Golitko et al., 2012) as new polities and centers emerged across the region. At the same time, coastal trade increased in importance (Braswell, 2003). With sea transport, larger volumes of goods could be moved over longer distances. These processes of increased commercialization (Berdan, 2003) were well under way before the initial emergence of the Aztec empire late in the Postclassic period, yet they greatly intensified as the Aztec spread their influence and thirst for goods from across Mesoamerica, demanding tribute not only in rare or valuable goods but in foodstuffs as well.

In Oaxaca, economic networks shifted as the Monte Albán state lost power and regional as well as extraregional boundaries became more permeable. As Monte Albán's influence waned, the leaders of emerging small polities used networks of personal connections to build power (Kowalewski, 2003c, p. 10). Economic networks became more important to connect settlements throughout the region, and the economy became more commercialized (Kowalewski, 2003b, p. 73). Networks of exchange often were key sources of revenue for the new small states, as *cacicazgo* heads strengthened their prior connections to areas outside the valley. These connections grew stronger as populations increased during the Late Postclassic.

TABLE 10.2. Population of other Late Postclassic polities in highland Oaxaca.*

| Polity | Population |
|---|---|
| Central Mixteca Alta | |
| Achiutla | 12,000 |
| Amoaltepec | 4,950 |
| Dzinicahua | 4,700 |
| Huamelulpan | 13,200 |
| Jazmín | 41,650 |
| Lagunas | 8,050 |
| Magdalena Peñasco | 10,750 |
| Nduayaco | 4,150 |
| Nejapilla | 9,300 |
| Northeast Tlaxiaco | 1,350 |
| Nundichi | 1,550 |
| Nuñu | 2,850 |
| San Juan Achiutla | 1,150 |
| Southeast Tlaxiaco | 2,750 |
| Tayata | 12,350 |
| Teposcolula | 36,000 |
| Tidaá | 1,700 |
| Tilantongo | 18,500 |
| Tlacotepec | 7,250 |
| Tlaxiaco | 9,100 |
| Yodobada | 4,700 |
| Yodocono | 1,900 |
| Yolomecatl | 7,550 |
| Yucuañe | 8,350 |
| Yucunama | 1,950 |
| Yucuxaco | 7,450 |
| Cuicatlán | |
| Cuicatlán | 4,300 |
| Dominguillo | 2,300 |
| Sola Valley | |
| La Cruz | 3,300 |
| Los Paderones | 5,700 |
| Other Mixteca | |
| Chachoapan | 8,500 |
| Coixtlahuaca | >100,000 |
| Etlatongo | 9,500 |
| Nochixtlán | 10,750 |
| Tamazulapan | 6,600 |
| Tejupan | 10,900 |
| Yanhuitlán | 20,500 |

* Sources (Spores, 1972; Byland, 1980; Redmond, 1983; Balkansky, 2002; Kowalewski et al., 2008, 2009).

The earliest and most significant growth in the Valley of Oaxaca during the Postclassic period began in parts of the valley that did not have the best land and that were less tightly integrated into the Monte Albán polity—Tlacolula and Ejutla (Nicholas, 1989; Feinman & Nicholas, 1990a). In those subregions, more households and sites had been reliant on exchange for basic necessities during the Classic period than populations residing in other parts of the valley. We suspect that this long-standing greater reliance on exchange was a factor in why these two subregions bounced back more quickly in Monte Albán V. In part, because of necessity, they had developed more networks outside the valley that continued after their trade connections with the capital began to disintegrate. During the Late Postclassic, Tlacolula was the most populous, the most commercialized, and the most market-dependent subregion of the valley (Kowalewski, 2003b, p. 73); as a consequence, population declines there were especially severe when access to markets was disrupted

the Spanish Conquest and enforced population aggregations (Kowalewski, 1997, p. 298, 2003a, p. 319).

The earlier demographic rebound in the Ejutla Valley also can be tied to interregional networks between the Mixteca Alta and the Pacific Coast of Oaxaca that intensified during the Early Postclassic following the decline of Classic period centers (King, 2008, p. 279; Levine et al. 2011, p. 127). By the Late Postclassic, Tututepec engaged in far-reaching networks of exchange and militaristic exploits that extended into the southern part of the Central Valleys of Oaxaca (Davies, 1968; Brockington, 1973; Ball & Brockington, 1978, p. 113; Spores, 1993; Joyce et al., 2004). Ejutla had long had exchange connections with populations on the Pacific Coast through various routes (White & Barber, 2012), and goods continued to arrive in Ejutla through coastal networks of exchange that increased in intensity during the Late Postclassic.

Sometime around AD 1300, demographic and political power in the Valley of Oaxaca shifted away from Tlacolula and back toward the middle of the valley, although the landscape of competitive *cacicazgos* continued. According to a recent reading (Oudijk, 2008) of documentary accounts, a confederation that included Macuilxochitl, Zaachila, and sites in the Mixteca Alta overthrew the prior power center at Mitla, in eastern Tlacolula, parts of which show evidence of having been dismantled and abandoned by late Monte Albán V (Esparza, 1983; Robles García & Juárez Osnaya, 2009, p. 396). Archaeologically, Cuilapan (at the foot of the ancient capital, Monte Albán) and Macuilxochitl became the centers of population and power.

The last centuries of the pre-Hispanic era in Oaxaca likely were characterized by many of the trends that we traditionally have associated with the Postclassic period more generally, such as significant population increase, more dispersed patterns of settlement, expanding exchange and interpersonal ties outside the valley, and increasing economic commercialization (Kowalewski et al., 1989; Feinman, 1996; Kowalewski, 2003c; Markens et al., 2008). The rapid Late Postclassic demographic growth in the Mixteca Alta most likely did not accelerate until AD 1200–1300 (Kowalewski et al., 2009, p. 317) and so is timed with explosive growth in central Mexico during the Middle Postclassic (Beekman & Christensen, 2003; Berdan & Smith, 2003). The increasing influence of the Aztec clearly was felt throughout the Mixteca Alta during the Late Postclassic. Located north of the Valley of Oaxaca and thus closer to central Mexico, the Mixteca Alta was affected earlier and more intensely by the expansionistic Aztec (Marcus, 1983g; Kowalewski et al., 2010). Thus we strongly suspect that the settlement findings for Monte Albán V in the Ejutla Valley that we report in this chapter pertain largely to (and are most relevant for) the period after ca. AD 1200 and prior to the Spanish Conquest. In the previous chapter, we presented our best estimates relevant to early Monte Albán V (ca. AD 900–1200).

## Monte Albán V Settlement in Ejutla

In many respects, Ejutla was more similar to the Valley of Oaxaca during the Late Postclassic period than at any prior time. The regional populations in both valleys reached their pre-Hispanic maxima, and growth occurred at all levels of the hierarchy. With no one dominant center and settlements spreading unbroken from the southern Valley of Oaxaca into the Ejutla Valley, settlement patterns in the latter mirrored those to the north in Oaxaca. Across both valleys, many large Monte Albán IV settlements continued as population centers and smaller sites filled in around them. Approximately 90% of settlements in both valleys had fewer than 100 people. Many of the smallest sites were new settlements that were occupied only during Monte Albán V. During the regional surveys, the only cultural material recovered on most of these small sites was utilitarian ceramics (Kowalewski & Finsten, 1983, p. 419).

Although sites were dispersed across the landscape, subregional population density continued to vary. Eastern Tlacolula was the most densely settled subregion of the Valley of Oaxaca (Fig. 10.4). Ejutla and Etla continued to have the lowest population densities, even though the rate of population growth was higher in Ejutla than in most Valley of Oaxaca subregions (Feinman & Nicholas, 1990a, table 4). Average site size in the two regions was more comparable than it had been since the fall of Monte Albán (Table 10.3).

The three principal centers in the Ejutla Valley were Coatecas Altas, the Ejutla site, and Taniche, all with 2,000–3,000 inhabitants. Although these settlements were much smaller than the largest Valley of Oaxaca centers (Macuilxochitl, Sa'a Yucu, and Mitla), they were comparable in size to the largest centers in Etla and southern Valle Grande, the two Oaxaca subregions farthest removed from the region's new demographic core in Tlacolula. Average site size also was lower in those two subregions (Table 10.4).

In the Ejutla region, the densest settlement was along the Ejutla River in central Ejutla and along its major tributaries in the north-central subarea (Fig. 10.5). Together these subareas held almost 60% of the regional population. Settlement was denser along Ejutla's entire northern boundary than in any prior phase, with no settlement break between southern Valle Grande and the Ejutla Valley.

Superficially, the unbroken line of settlements from central Oaxaca south into Ejutla is similar to the distribution of Monte Albán IIIA centers. Yet differences in the settlement patterns for these two most populous phases in the combined Oaxaca/Ejutla region reflect changes in the nature of

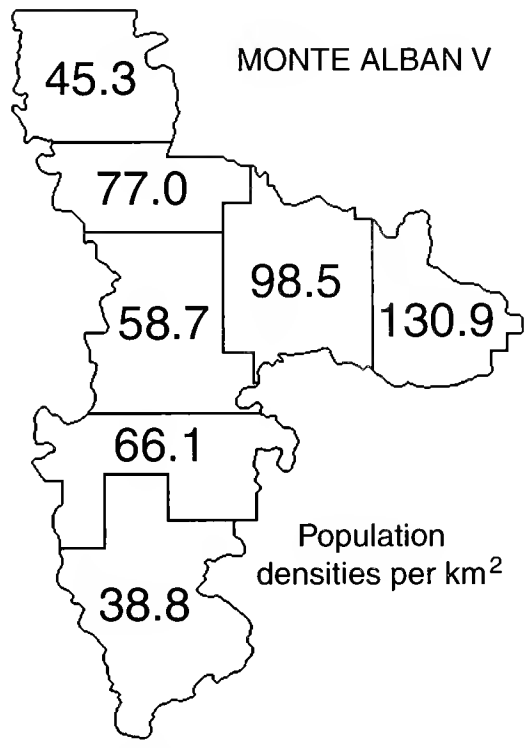



FIG. 10.4. Monte Albán V population densities in Ejutla and Valley of Oaxaca subregions.

TABLE 10.3. Population densities, component densities, and average site size in Ejutla and the Valley of Oaxaca in Monte Albán V.

| | Oaxaca | Ejutla |
|---|---|---|
| Population densities/km$^2$ | 78.4 | 38.8 |
| Component densities*/100 km$^2$ | 72.6 | 62.5 |
| Average site area* | 5.2 | 3.3 |
| Average site population* | 108 | 62 |

* Combined sites.

integration between the two valleys. During Monte Albán IIIA, the connection between the two regions appears to have been through a series of mound centers that stretched from the Valle Grande into the Ejutla Valley (Fig. 7.7). In contrast, in Monte Albán V, the connections occurred more through small sites and multiple networks; southern Valle Grande was especially lacking in mound centers (Fig. 10.6). Although there were more population centers in the southern part of the Valley of Oaxaca than previously, there were few in the highest ranks of the population hierarchy (Fig. 10.7). These patterns suggest that Late Postclassic socioeconomic networks were more open and diversified, with webs of interpersonal and settlement-to-settlement connections, rather than having been linked through a small subset of political leaders residing in the principal civic-ceremonial centers.

Settlements in northern Ejutla were part of demographic clusters that focused on two different routes leading north into the Valley of Oaxaca: the Atoyac River and the Ocotlán route. The Atoyac River route, which had been more important during the Formative and early Monte Albán phases, largely was supplanted by the land route through Ocotlán during the Classic period. Both routes may have been equally important avenues of communication and commerce with the Valley of Oaxaca during the Late Postclassic.

Many Monte Albán V settlements in the Ejutla Valley were situated in defendable locations or were encircled by standing defensive walls (Fig. 10.8), mirroring the IIIA pattern. Yet many of the Late Postclassic terrace sites in Ejutla protected the region's three principal centers from incursions from the east, possibly outsiders/attackers moving up the Tehuantepec River. These sites did not form a continuous network with defendable sites in Oaxaca (as they had in Monte Albán IIIA), and there is not a strong evidential basis to imply that the two valleys were tightly interconnected politically as they had been earlier during Monte Albán IIIA when the entire region was under Monte Albán's hegemony.

Population expanded considerably in southern Ejutla in the Late Postclassic, yet relative to the rest of the region, population densities remained low there, as they had been previously (only 6% of the total Ejutla Valley population). Yet the settlement patterns at the southern edge were different than earlier. Whereas the IIIA settlement in the southern part of the Ejutla Valley was concentrated in a few large sites, most of which were not very defensibly located, the Monte Albán V sites in this part of Ejutla were small, with many defendable sites along the southern ridge that separates Ejutla from Miahuatlán. These sites likely were situated for defense against one or more growing polities in Miahuatlán or to protect against forays from coastal centers, such as Tututepec (Brockington, 1973; Ball & Brockington, 1978; Davies, 1968). Markman (1981) also recorded an increase in small settlements in northern Miahuatlán in Monte Albán V, but the greatest increases occurred farther south around the modern head town of Miahuatlán. Like Oaxaca and Ejutla, the Late Postclassic population in Miahuatlán was much higher than in earlier phases and also more dispersed. Yet there continued to be an area of low population that separated Miahuatlán from Ejutla and the rest of the Central Valleys of Oaxaca.

Changes in the boundaries of settlement clusters in the Ejutla Valley between Monte Albán IV and V also point to broad-scale reorganization. What spatially appeared as three Ejutla Valley settlement clusters in Monte Albán IV became five clusters in Monte Albán V (Fig. 10.2), similar in size to two Postclassic settlement clusters that Balkansky (2002, p. 78) identified for the adjacent Sola Valley. Settlements along the northern and northwestern border of the Ejutla region, including most of the prior western cluster, continued to be part of a cluster centered on El Choco in southern Valle Grande. Most of the remaining Monte Albán V settlements in Ejutla belonged to four small settlement clusters, three of which grew out of the central Monte Albán IV cluster that had centered on the earlier large community at San Joaquín. Following the abandonment of that earlier center, one settlement cluster formed to its north while two other clusters expanded to the south. In most settlement clusters, the largest community had been a lower-order center in Monte Albán IV that grew significantly in V. The boundaries of the easternmost Monte Albán IV cluster did not change, although the early settlement at Coatecas, which is situated to monitor a passageway to the coast, became much larger.

Given the variable distributions of population in centers and smaller settlements in each cluster (or *cacicazgo*), these settlement clusters may have been organized differently. For example, in the northern Ejutla cluster (El Vergel), there was no one dominant center (Fig. 10.2). Instead, 68% of the population was relatively evenly distributed among four closely spaced and equally sized centers—El Vergel (V-69), EJ-EJ-EV-15 (V-83), EJ-EJ-MT-1 (V-57), and EJ-EJ-MT-9 (V-46)—all with populations between 500 and 1,000 (Table 10.5 and Fig. 10.5); the rest of the population settled in nearby small communities. In the other settlement clusters, one center (with a population between 2,000 and 3,000) was clearly dominant, yet the hierarchical relationship between communities varied. The easternmost cluster at the valley's topographic edge had the most compact population distribution, with 75% of the population in one community, Coatecas (V-218), and 95% of the entire population residing in just three large sites—Coatecas, EJ-EJ-EJ-30 (V-173), and EJ-EJ-EJ-27 (V-174). The latter two settlements had populations between 300 and 500. Settlements were more dispersed and the population was less concentrated in just a few sites in the central and southwestern settlement clusters. Just over half of the population in the central cluster resided in the

TABLE 10.4. Number of sites, occupied area, and average site size for Ejutla and Valley of Oaxaca subregions in Monte Albán V.

| | No. of sites* | Occupied area (ha) | Average site size (ha) |
|---|---|---|---|
| Etla | 270 | 793.2 | 2.9 |
| Central | 156 | 1,048.1 | 6.7 |
| Northern Valle Grande | 219 | 1,195.3 | 5.5 |
| Southern Valle Grande | 276 | 1,145.1 | 4.1 |
| Western Tlacolula | 360 | 2,014.1 | 5.6 |
| Eastern Tlacolula | 260 | 1,849.3 | 7.1 |
| Ejutla | 322 | 1,071.1 | 3.3 |

* Combined sites.

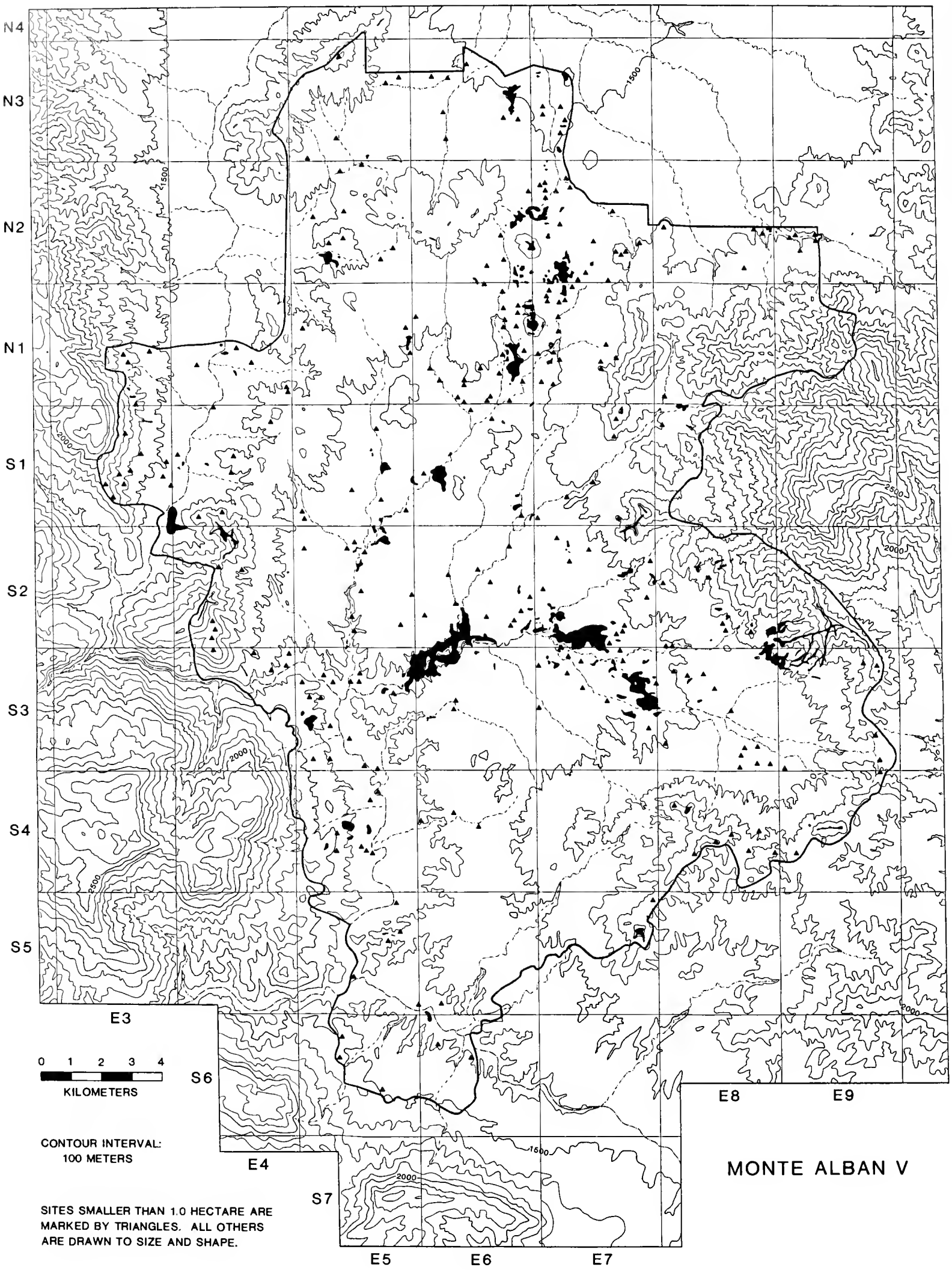



FIG. 10.5. Monte Albán V settlements in the Ejutla Valley.

Ejutla site (V-189). Only one other settlement, EJ-EJ-EJ-42 (V-304), had a large population (between 500 and 1,000), and 30% of the population resided in smaller settlements, generally with fewer than 100 residents. In the southwestern cluster, the only large site was Taniche (V-176); there was no large secondary center but rather half a dozen smaller population centers with between 100 and 400 people. In both of these clusters, other small sites were widely dispersed throughout the area.

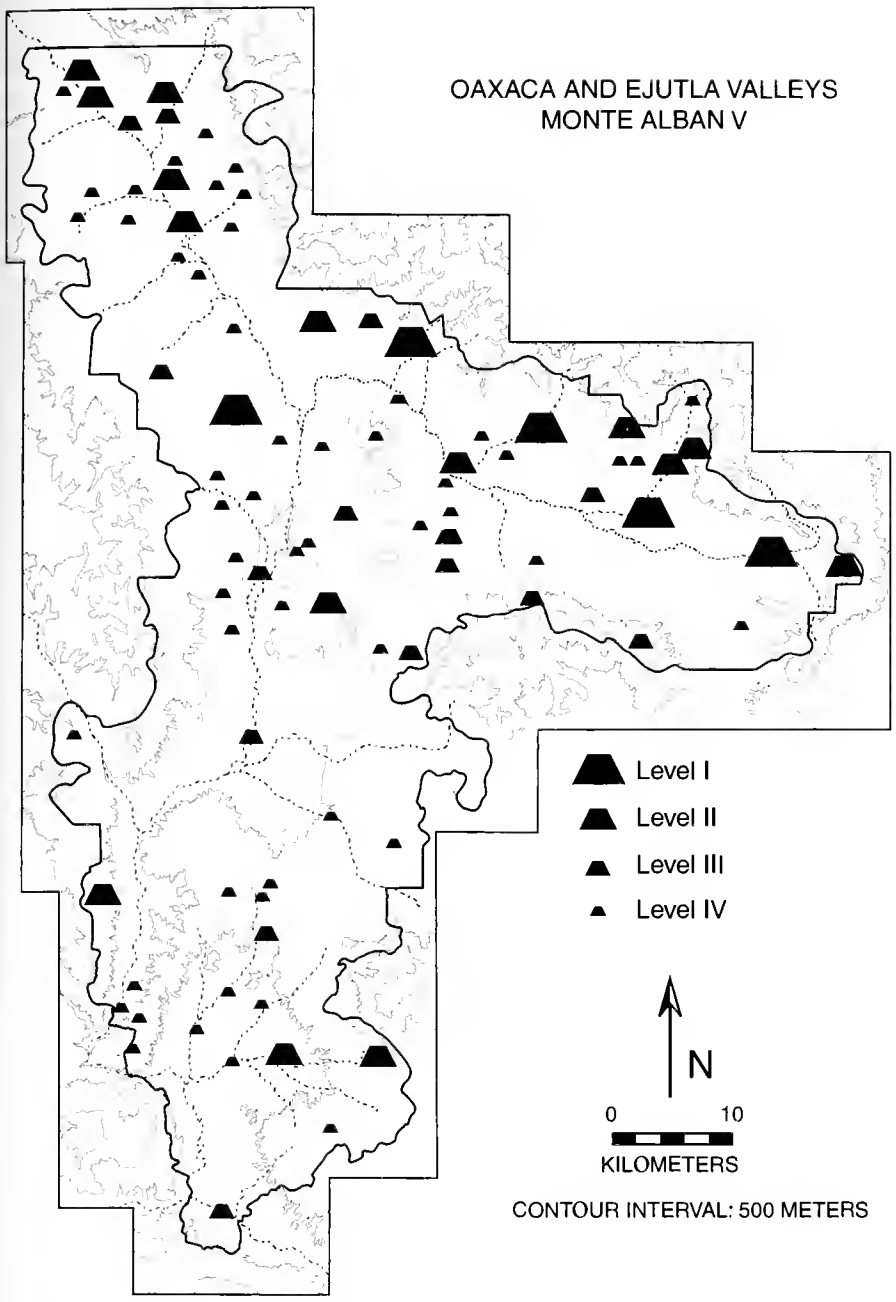



FIG. 10.6. Monte Albán V mound centers in Ejutla and the Valley of Oaxaca.

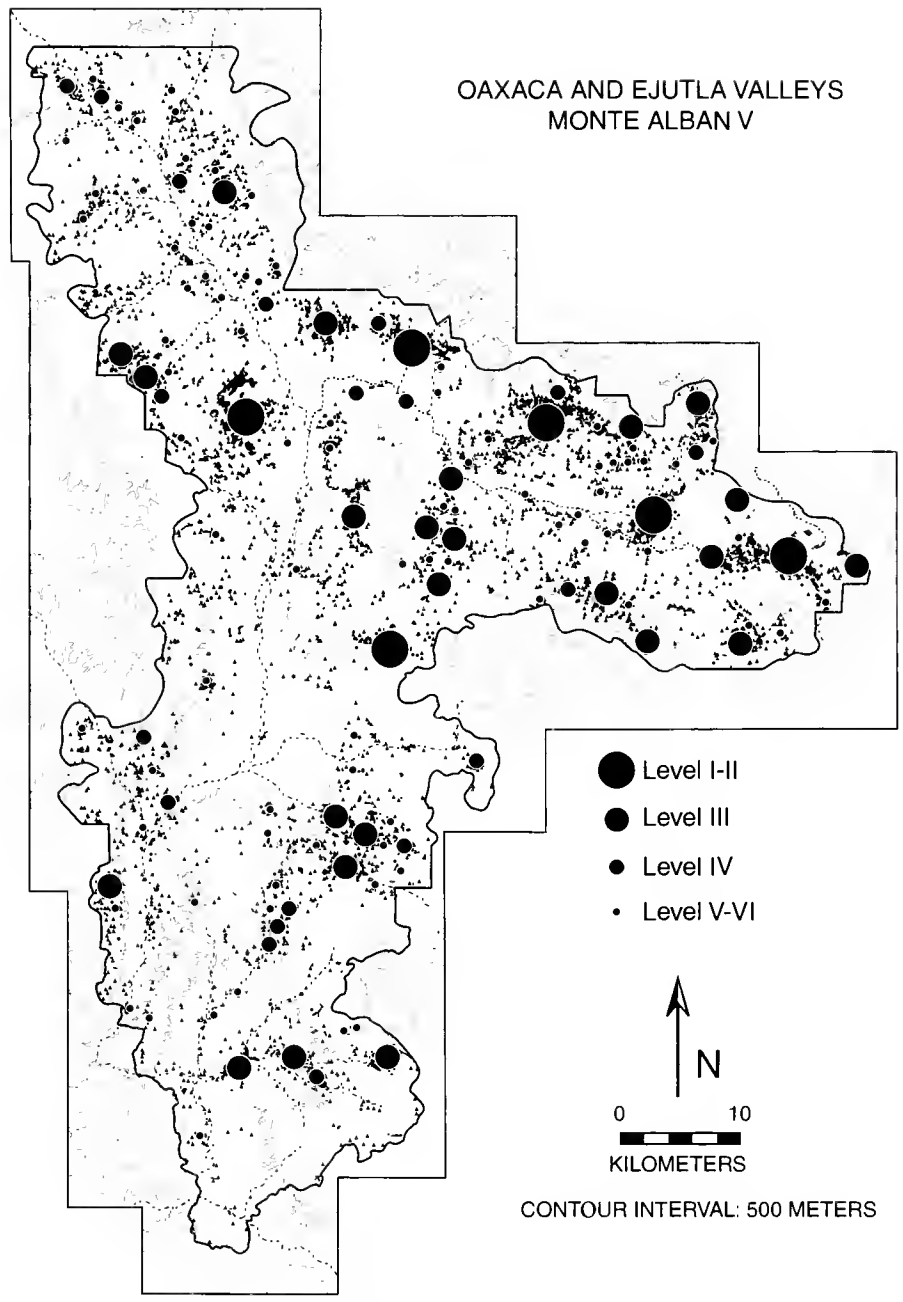



FIG. 10.7. Monte Albán V settlement and population centers in Ejutla and the Valley of Oaxaca.

## Monte Albán V Terrace Sites

Although terrace sites continued to house large populations during the Late Postclassic, their overall significance in the Oaxaca and Ejutla Valleys declined. This shift in settlement distribution likely signals functional changes in the nature and role of these compact communities, elevated above the valley floor. Late Postclassic terrace sites tend to be smaller than earlier ones, and none were as large as Monte Albán had been during the Late Classic period. Jalieza continued to be occupied, but it, too, was much reduced from the 16,000 people who resided there during Monte Albán IV. Many more of the large Postclassic sites were located on the valley floor so that a much smaller proportion of the total population resided in terrace sites (about 20% in the Valley of Oaxaca and 25% in Ejutla). Postclassic terrace sites may have continued as defendable locations or redoubts instead of principal population centers. We begin with descriptions of Late Postclassic terrace sites in Ejutla and then discuss terrace sites in Oaxaca more broadly.

### Monte Albán V Terrace Sites in Ejutla

We recorded Monte Albán V ceramics on at least three terraces at 12 sites in Ejutla (Table 10.6 and Fig. 10.8); at one additional small site, EJ-EJ-EC-4 (V-205), terraces were badly destroyed and could not be mapped or counted. Four of these locations are reoccupations of Monte Albán IIIA terrace sites, two are continued occupations of Monte Albán IV terrace sites that increased in size during the Late Postclassic, and six are new settlements.

Four of these terrace settlements are located in western Ejutla, with two on either side of the Atoyac River before it exits the southernmost extension of the Valle Grande. EJ-SML-SML-16 (V-257) is situated just above the point where the Atoyac River leaves the valley; with 59 residential terraces and several defensive walls, it was the second-largest terrace site in the Ejutla Valley during Monte Albán V (Appendix IX, Fig. 38; see also Fig. 7.13). The site has a long occupation, beginning in Monte Albán IIIA. With limited public architecture and a population of around 500, the site may not have had a large civic-ceremonial role other than monitoring movements into and out of this southern extension of Oaxaca. The other three terrace sites in western Ejutla were small, each with fewer than 10 terraces. EJ-SAZ-SAZ-4 (V-235) is a reoccupation of a small IIIA terrace site (Appendix IX, Fig. 34). Nearby is newly settled EJ-EJ-SCN-5 (V-226), which also consisted of just a few closely spaced terraces (Appendix IX, Fig. 18). EJ-LC-AE-7 (V-260; Appendix IX, Fig. 25) consists of five terraces and several small structures dispersed along a high ridge above EJ-SML-

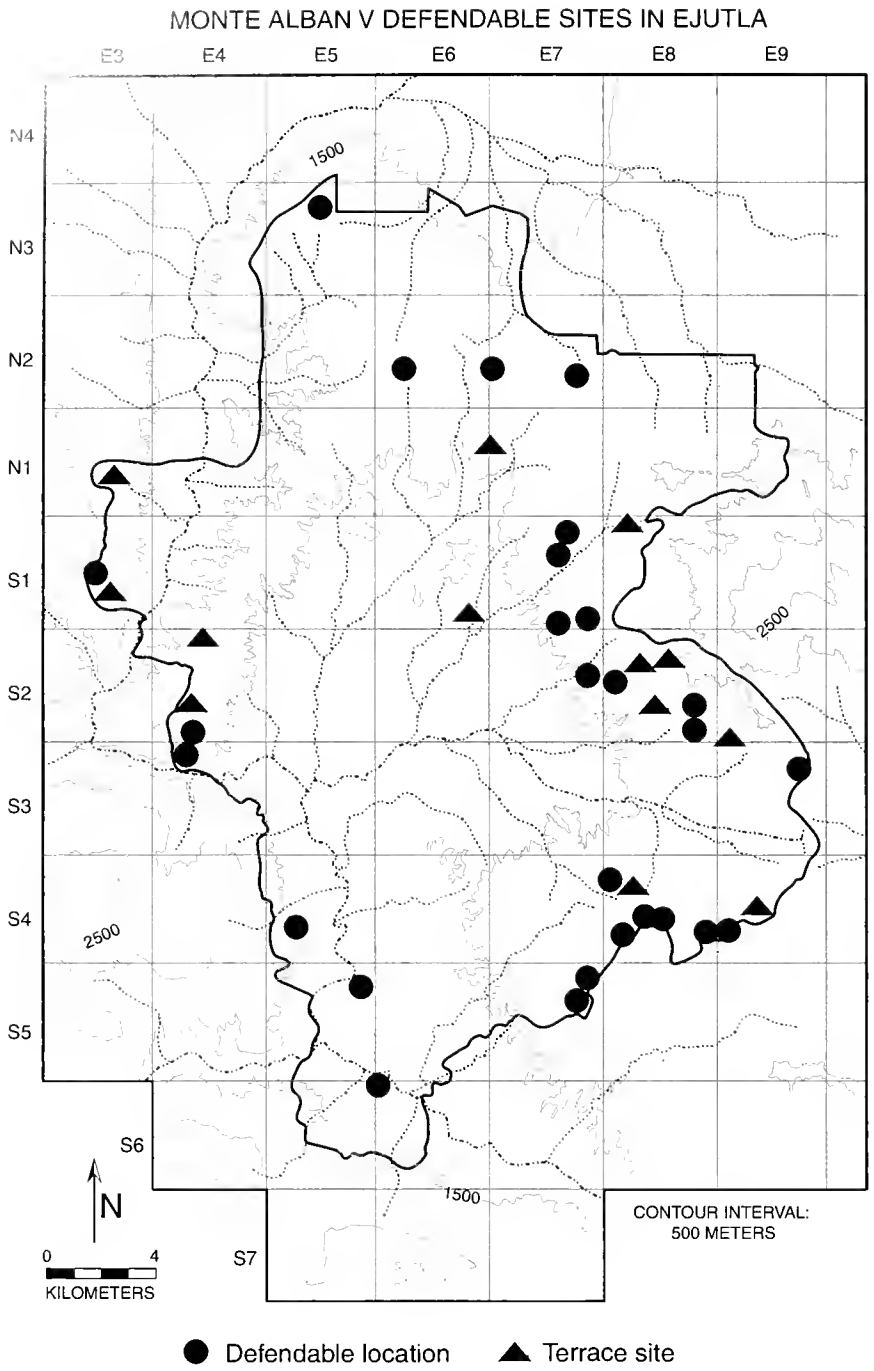



FIG. 10.8. Monte Albán V sites in defendable locations in Ejutla.

SML-16. This site is one of the more defensibly situated sites in Ejutla.

Eight terrace sites are in eastern Ejutla, mostly in highly defendable locations along ridges that define the eastern limits of the Ejutla Valley. The largest is Coatecas (V-218; Fig. 10.9 and Appendix IX, Fig. 1), where we mapped 140 terraces. It was one of the largest terrace sites in the Valleys of Oaxaca and Ejutla during Monte Albán V. The terraces are dispersed along several long ridges that descend from a high promontory with an excellent view of the main Ejutla Valley to the west and into the adjacent Río Grande/Tehuantepec River drainage to the east. Although we know almost nothing of the settlement history of the area east of the Ejutla Valley, the buildup of defendable sites along this eastern border would suggest that tension existed between the two areas. At the base of the lower terraced slopes at Coatecas, in nondefendable locations, are two complexes of formal architecture that include two ballcourts. The site clearly had civic-ceremonial and well as defensive functions. We discuss the architecture later in this chapter.

EJ-EJ-EJ-27 (V-174; Appendix IX, Fig. 7) and EJ-EJ-EJ-30 (V-173; Fig. 10.10 and Appendix IX, Fig. 8) are situated to the west, along the same ridge system as Coatecas, and were occupied only in Monte Albán V. Both consist of approximately 50 small terraces arranged in tight clusters. No structures or defensive walls were mapped at either site, but defense clearly was a factor in their location. Two terrace sites on the ridge system that defines the southeastern edge of the Ejutla Valley were much smaller; both are very defensibly situated at the top of very steeply sloping ridges. The Monte Albán V settlement at EJ-CA-CA-13 (V-362) is a reoccupation of a larger IIIA terrace site (Appendix IX, Fig. 2; see also Fig. 7.14); the three terraces (minimally) that were reoccupied in Monte Albán V are situated at the very top of the ridge. EJ-EJ-EA-6 (V-320), to the west, consisted of several structures on a high ridgetop encircled by six terraces and 10 defensive walls of varying lengths (Fig. 10.11 and Appendix IX, Fig. 5).

The remaining three sites with terrace occupations that date to Monte Albán V are less defendable in nature. El Vergel (V-69; Fig. 10.12 and Appendix IX, Fig. 9) is situated on a low hilltop in the northern part of Ejutla, and the 20 terraces that we mapped there housed a small proportion of the site's total population. Like Coatecas, this site had formal architectural groupings that included two ballcourts (see discussion below); we also found craft debris scattered over several of the terraces. EJ-EJ-LO-7 (V-151; Appendix IX, Fig. 11) consists of three terraces (others may have been destroyed) situated on a lower piedmont slope in northeastern Ejutla. EJ-EJ-SJ-2 (V-116; Appendix IX, Fig. 19, see also Fig. 7.21) is situated on a low piedmont spur near the center of the valley. Six dispersed terraces at the site were reoccupied in Monte Albán V, and the overall population was considerably smaller than in Monte Albán IIIA.

Overall, it appears that defense was a principal concern at most of the Monte Albán V terrace sites in Ejutla. In addition to the terrace sites, several other small Monte Albán V sites located in the margins of the Ejutla Valley, especially to the south and east, have stone walls that date to Monte Albán V (Fig. 10.13). These sites fill out strings of terrace sites in the valley margins, and there appears to have been more concern with monitoring/guarding the southern and eastern borders of Ejutla at that time than during Monte Albán IIIA. The clearest defendable site is EJ-EJ-BL-3 (V-360; Fig. 10.14 and Appendix IX, Fig. 4); it is located on the top of a steep knob on the same southern ridge system as EJ-EJ-EA-6 that divides the Ejutla and Miahuatlán drainages. The site has an excellent view of the surrounding area, especially south into the Miahuatlán Valley, and consists of a series of nine defensive walls that circle the knob; several of the walls are over 250 m in length. Two sites in western Ejutla feature low stone walls that are defensive in nature. EJ-LC-LC-11 (V-264; Appendix IX, Fig. 27) consists of a low wall that encloses a large rectangular area on top of a very steeply sloping ridgetop. A nearby site on a lower ridgetop, EJ-LC-LC-14 (V-262; Appendix IX, Fig. 29), consists of a low wall that partially encloses a low mound and one house foundation. Several short defensive walls dispersed across a descending ridge are still visible at EJ-EJ-LO-11 (V-156; Appendix IX, Fig. 13) in northeastern Ejutla. The southernmost defensibly located site in Ejutla is Yogana (V-350; Appendix IX, Fig. 43). Two walls at the site are incorporated into public architecture and may not be primarily defensive features, but the site is situated in a very defendable location on top of a ridge that slopes steeply down to the Miahuatlán River.

TABLE 10.5. Monte Albán V sites in the Ejutla Valley survey region with populations over 100, mounds, terraces, defensive walls, and/or ceramic collections.

| Site | Name | Grid square | Population | Mounds <1 m | Mounds ≥1 m | Volume ($m^3$) | Terraces | Defensive walls | Ceramic types |
|---|---|---|---|---|---|---|---|---|---|
| 1 | OC-OC-BV-13 | N3E5 | 8 | 0 | 0 | 0 | 0 | 1 | — |
| 3 | OC-OC-BV-12 | N3E5 | 8 | 0 | 1 | 110 | 0 | 0 | — |
| 21 | EJ-EJ-CHI-1 | N3E6 | 373 | 0 | 0 | 0 | 0 | 0 | — |
| 30 | EJ-EJ-CHI-7 | N3E7 | 56 | 0 | 1 | 112 | 0 | 0 | — |
| 40 | EJ-EJ-LOG-1 | N2E5 | 276 | 0 | 0 | 0 | 0 | 0 | 3 |
| 44 | EJ-EJ-SMC-6 | N2E6 | 46 | 1 | 2 | 375 | 2 | 0 | 2 |
| 46 | EJ-EJ-MT-9 | N2E6 | 580 | 0 | 0 | 0 | 0 | 0 | — |
| 49 | EJ-EJ-MT-10 | N2E7 | 33 | 0 | 3 | 471 | 0 | 0 | 5 |
| 50 | EJ-EJ-MT-11 | N2E6 | 113 | 0 | 2 | 384 | 0 | 0 | 0 |
| 55 | EJ-EJ-EV-24 | N2E6 | 224 | 0 | 0 | 0 | 0 | 0 | — |
| 57 | EJ-EJ-MT-1 | N2E7 | 826 | 0 | 0 | 0 | 0 | 0 | — |
| 59 | EJ-EJ-SMC-7 | N1E5 | 8 | 0 | 1 | 1,111 | 0 | 0 | 2 |
| 60 | EJ-EJ-SMC-9 | N1E5 | 105 | 0 | 0 | 0 | 0 | 0 | — |
| 69 | EJ-EJ-EV-2/13 (El Vergel) | N1E6 | 665 | 4 | 9 | 4,166 | 20 | 1 | 16 |
| 83 | EJ-EJ-EV-15 | N1E6 | 706 | 0 | 0 | 0 | 0 | 0 | 1 |
| 87 | EJ-LP-LP-5 | S1E5 | 8 | 0 | 0 | 0 | 0 | 0 | 1 |
| 101 | EJ-EJ-SMC-1 | N1E6 | 12 | 0 | 0 | 0 | 0 | 0 | 5 |
| 108 | EJ-LP-LG-4 | S1E5 | 152 | 0 | 0 | 0 | 0 | 0 | — |
| 112 | EJ-LP-LG-1 | S1E6 | 355 | 0 | 2 | 1,196 | 0 | 0 | 1 |
| 116 | EJ-EJ-SJ-2 | S1E6 | 88 | 2 | 4 | 1,476 | 6 | 0 | 3 |
| 121 | EJ-EJ-SJ-6 | S2E5 | 277 | 0 | 0 | 0 | 0 | 0 | — |
| 129 | OC-SJP-SJP-100 | N2E7 | 8 | 0 | 0 | 0 | 0 | 0 | 5 |
| 132 | OC-SJP-SJP-108 | N2E8 | 8 | 0 | 1 | 1,139 | 0 | 0 | 2 |
| 135 | EJ-SMC-SMC-2 | N1E7 | 8 | 0 | 0 | 0 | 0 | 0 | 1 |
| 139 | OC-SJP-SJP-121 | N2E8 | 81 | 0 | 0 | 0 | 0 | 0 | 0 |
| 151 | EJ-EJ-LO-7 | S1E8 | 106 | 0 | 0 | 0 | 3 | 0 | — |
| 156 | EJ-EJ-LO-11 | S2E7 | 84 | 2 | 1 | 94 | 1 | 4 | — |
| 161 | EJ-LC-AE-1 | S2E5 | 21 | 0 | 0 | 0 | 0 | 0 | 1 |
| 170 | EJ-EJ-EJ-9 | S2E7 | 116 | 0 | 0 | 0 | 0 | 0 | — |
| 172 | EJ-EJ-EJ-2 | S2E7 | 68 | 1 | 0 | 174 | 0 | 0 | 3 |
| 173 | EJ-EJ-EJ-30 | S2E8 | 368 | 0 | 0 | 0 | 48 | 0 | — |
| 174 | EJ-EJ-EJ-27 | S2E8 | 444 | 0 | 0 | 0 | 54 | 0 | 8 |
| 176 | EJ-TAN-TAN-2 (Taniche) | S3E6 | 2,970 | 0 | 2 | 1,276 | 0 | 0 | 13 |
| 180 | EJ-BSM-BSM-20 | S2E6 | 34 | 0 | 0 | 0 | 0 | 0 | 3 |
| 185 | EJ-TAN-TAN-1 | S2E6 | 8 | 0 | 0 | 0 | 0 | 0 | 3 |
| 189 | EJ-EJ-EJ-1 (Ejutla) | S2E7 | 2,358 | 0 | 12 | 80,000 | 0 | 0 | 10 |
| 198 | EJ-EJ-EJ-3 | S2E7 | 8 | 0 | 1 | 106 | 0 | 0 | 3 |
| 205 | EJ-EJ-EC-4 | S2E8 | 37 | 0 | 0 | 0 | ? | 0 | 6 |
| 218 | EJ-CA-CA-1 (Coatecas) | S2E9 | 2,560 | 8 | 16 | 17,999 | 140 | 1 | 9 |
| 224 | EJ-EJ-SCN-16 | N1E3 | 8 | 0 | 0 | 0 | 0 | 0 | 3 |
| 226 | EJ-EJ-SCN-5 | N1E3 | 45 | 0 | 0 | 0 | 5 | 0 | — |
| 227 | EJ-EJ-SCN-3 | N1E3 | 10 | 1 | 0 | 121 | 0 | 0 | — |
| 229 | EJ-EJ-SCN-1 | S1E3 | 13 | 1 | 1 | 283 | 0 | 0 | — |
| 235 | EJ-SAZ-SAZ-4 | S1E3 | 68 | 0 | 0 | 0 | 8 | 0 | 2 |
| 240 | EJ-SML-SML-18 | S1E4 | 18 | 0 | 2 | 258 | 0 | 0 | 3 |
| 243 | EJ-SAZ-SAZ-9 | S1E4 | 541 | 0 | 4 | 1,526 | 0 | 0 | 2 |
| 245 | EJ-EJ-SCN-19 | N1E4 | 18 | 0 | 0 | 0 | 0 | 0 | 3 |
| 246 | EJ-EJ-SCN-18 | N1E4 | 41 | 0 | 0 | 0 | 0 | 0 | 3 |
| 250 | EJ-EJ-SCN-10 | S1E4 | 8 | 0 | 0 | 0 | 0 | 0 | 5 |
| 251 | EJ-EJ-SCN-12 | N1E4 | 8 | 1 | 0 | 41 | 0 | 0 | — |
| 257 | EJ-SML-SML-16 | S2E4 | 497 | 0 | 3 | 463 | 59 | 6 | 10 |
| 260 | EJ-LC-AE-7 | S2E4 | 119 | 1 | 5 | 432 | 5 | 0 | — |
| 262 | EJ-LC-LC-14 | S2E4 | 8 | 2 | 0 | 18 | 0 | 1 | — |
| 264 | EJ-LC-LC-11 | S3E4 | 8 | 0 | 0 | 0 | 0 | 1 | — |
| 265 | EJ-LC-LC-13 | S3E4 | 8 | 1 | 0 | 10 | 0 | 0 | 1 |
| 267 | EJ-LC-AB-1 | S2E5 | 9 | 1 | 2 | 504 | 0 | 0 | 3 |
| 287 | EJ-LC-LC-5 | S3E5 | 124 | 0 | 0 | 0 | 0 | 0 | 4 |
| 288 | EJ-LC-LL-1 | S3E5 | 11 | 0 | 0 | 0 | 0 | 0 | 3 |
| 291 | EJ-LC-LL-2 | S3E5 | 8 | 1 | 0 | 56 | 0 | 0 | 2 |
| 295 | EJ-SAA-SAA-10 | S4E5 | 8 | 0 | 1 | 608 | 0 | 0 | 1 |
| 304 | EJ-EJ-EJ-42 | S3E7 | 730 | 0 | 1 | 15,155 | 0 | 0 | 9 |
| 320 | EJ-EJ-EA-6 | S4E8 | 52 | 1 | 2 | 2,885 | 6 | 10 | 5 |
| 328 | EJ-SAA-SAA-8 | S4E5 | 213 | 0 | 0 | 0 | 0 | 0 | — |
| 331 | EJ-SAA-SAA-6 | S4E5 | 69 | 0 | 0 | 0 | 0 | 0 | 4 |
| 333 | EJ-SAA-SAA-2 | S4E5 | 17 | 0 | 0 | 0 | 0 | 0 | 4 |
| 337 | EJ-SAA-SAA-1 | S4E5 | 14 | 0 | 0 | 0 | 0 | 0 | 5 |
| 346 | EJ-YO-YO-5 | S6E5 | 8 | 0 | 0 | 0 | 0 | 0 | 4 |
| 350 | EJ-YO-YO-12 (Yogana) | S6E6 | 75 | 3 | 7 | 8,185 | 1 | 2 | 13 |
| 360 | EJ-EJ-BL-3 | S5E7 | 52 | 0 | 0 | 0 | 0 | 9 | 5 |
| 362 | EJ-CA-CA-13 | S4E9 | 42 | 0 | 0 | 0 | 3 | 2 | 9 |

TABLE 10.6. Monte Albán V terrace sites in the Ejutla Valley survey region.

| Site no. | Field site no. | Population | Terraces | Average length (m) | Average width (m) | Average area ($m^2$) | No. with items | % with items | Role | Defensive wall | Defendable location | Mound hierarchy | Population hierarchy | Other phases |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11-218 | EJ-CA-CA-1 | 2,560 | 140 | 17.4 | 7.0 | 139.3 | 23 | 16.4 | administrative/defense | yes | yes | II | III | IV |
| 11-257 | EJ-SML-SML-16 | 497 | 59 | 18.6 | 5.0 | 105.6 | 0 | 0.0 | defense | yes | yes | — | V | IIIA |
| 11-174 | EJ-EJ-EJ-27 | 444 | 54 | 13.8 | 4.5 | 70.0 | 10 | 18.5 | defense | ? | yes | — | V | — |
| 11-173 | EJ-EJ-EJ-30 | 368 | 48 | 10.9 | 4.4 | 49.6 | 6 | 12.5 | defense | ? | yes | — | VI/VII | — |
| 11-69 | EJ-EJ-EV-2/13 | 665 | 20 | 25.6 | 8.4 | 288.1 | 6 | 30.0 | defense | yes | yes | III | IV | IV |
| 11-235 | EJ-SAZ-SAZ-4 | 68 | 8 | 17.1 | 7.4 | 133.3 | 0 | 0.0 | defense | no | yes | — | — | IIIA |
| 11-116 | EJ-EJ-SJ-2 | 88 | 6 | 19.2 | 6.8 | 126.5 | 1 | 16.7 | ? | no | no | IV | — | IIIA |
| 11-320 | EJ-EJ-EA-6 | 52 | 6 | 25.8 | 3.9 | 108.6 | 0 | 0.0 | defense | yes | yes | — | — | — |
| 11-226 | EJ-EJ-SCN-5 | 45 | 5 | 25.4 | 6.4 | 153.4 | 0 | 0.0 | ? | no | no | — | — | — |
| 11-260 | EJ-LC-AE-7 | 119 | 5 | 15.2 | 7.3 | 111.6 | 2 | 40.0 | defense | ? | yes | — | — | — |
| 11-151 | EJ-EJ-LO-7 | 106 | 3 | 39.5 | 6.7 | 267.6 | 0 | 0.0 | ? | no | no | — | — | — |
| 11-362 | EJ-CA-CA-13 | 42 | 3 | 19.0 | 8.5 | 167.2 | 3 | 100.0 | defense | yes | yes | — | — | IIIA |
| 11-205 | EJ-EJ-EC-4 | 37 | ? | — | — | — | — | — | ? | ? | yes | — | — | — |

FIG. 10.9. Coatecas terrace site (EJ-CA-CA-1) on top and slopes of ridge.

**Comparison of Monte Albán V Terrace Sites in Oaxaca and Ejutla**

Late Postclassic terrace sites in Oaxaca and Ejutla tend to be reoccupations of (or continued occupations at) earlier settlements. This is more the case in the Valley of Oaxaca (77% of terrace sites) than in the Ejutla Valley (50%; Tables 10.6 and 10.7). Overall, the Late Postclassic settlements are smaller; many had 30 or fewer terraces. At the larger sites, the later settlement was often dispersed across a limited number of terraces than had been constructed during previous occupations of the site. In this respect, the Ejutla Valley and the Valley of Oaxaca were very different from the Mixteca Alta, where the population lived in dense, hilltop terrace sites throughout the Late Postclassic (Kowalewski et al., 2009, p. 317).

In both valleys, the number of sites with defensive features increased. In Oaxaca, 31% of terraced sites have defensive walls, as do 42% of terrace sites in Ejutla, and most of the terrace sites are defensibly located. Another general characteristic of defendable sites is smaller terrace size, but this is difficult to determine for Postclassic sites because so many Monte Albán V terrace sites are reoccupations. Still, the newly settled (single-component) Monte Albán V terrace sites tend to have smaller terraces. For example, at the large hilltop community of TL-MIT-MIT-35 in Tlacolula, average terrace size is only 50 $m^2$. At the two largest newly settled terrace sites

FIG. 10.10. EJ-EJ-EJ-30 terrace site on top of ridgeline in center of photograph.

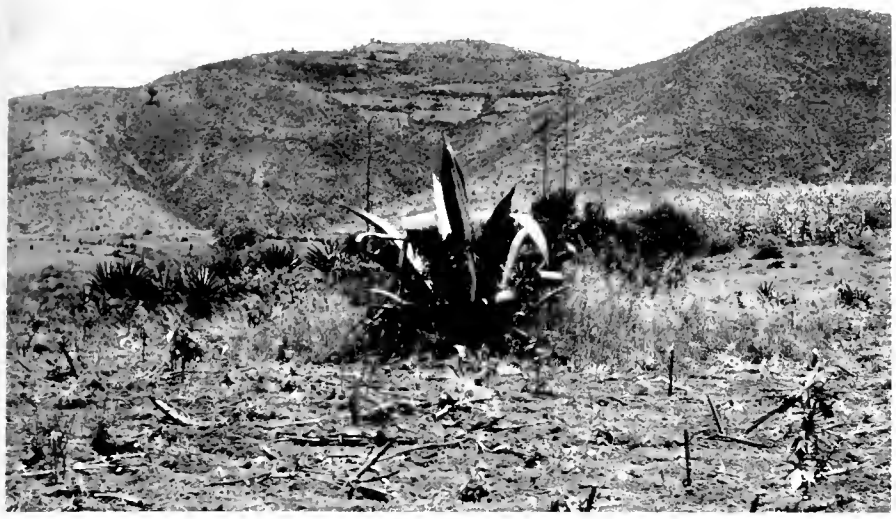


FIG. 10.11. EJ-EJ-EA-6 terrace and defensive wall site on ridgetop in center of photograph.

in Ejutla (EJ-EJ-EJ-27 and EJ-EJ-EJ-30), average terrace sizes are 70 $m^2$ and 50 $m^2$. Most of the other single-component V terrace sites in Ejutla are small and defensibly located.

Most Monte Albán V terrace sites are found in the same sectors of the two valleys as earlier terrace sites, but the distribution was slightly different (Fig. 10.13). There were many fewer in the western part of southern Valle Grande and in Ocotlán. Other terrace sites are located in small clusters, often near the borders of settlement clusters, especially along the edges of Tlacolula, and along the eastern and western edges of Ejutla. The defensive character of most Postclassic terrace sites and the increased clustering suggests a degree of animosity between the small Monte Albán V petty kingdoms. The few terrace sites that are not located along borders were larger and were civic-ceremonial centers. It is probable that there was a nested series of shifting alliances between various settlement clusters. Certainly, such transitional political relations would fit historical accounts of this period (e.g., Pohl, 2003; Oudijk, 2008).

The southern edge of Ejutla was more heavily guarded by a series of defendable and terraced sites in Monte Albán V than in IIIA (compare Fig. 10.8 to Fig. 7.9). Projectile points also are disproportionately recorded at those sites. Whereas only 13% of all Monte Albán V sites in Ejutla are defensively located, 85% of points made from chert (and other non-obsidian stone) are from defendable sites that ring the valley in all directions (Fig. 10.15). The pattern for obsidian points is less clear, in part because the working of obsidian was a significant activity at Taniche (V-176) in the central part of the Ejutla Valley in the Late Postclassic (see discussion below on obsidian). Most of the obsidian points are associated with the two largest settlement clusters in the central Ejutla Valley;

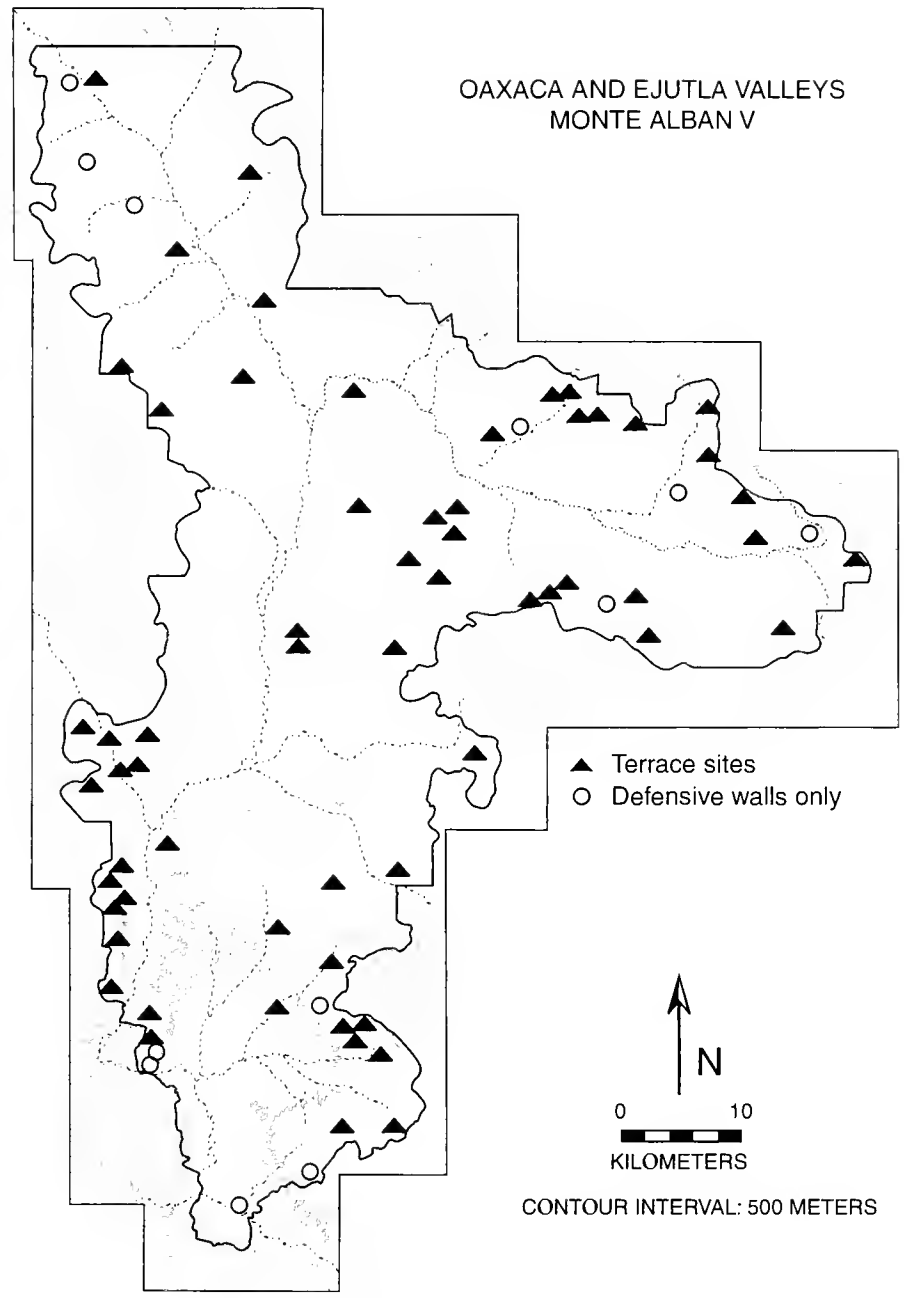



FIG. 10.13. Monte Albán V terraced sites in Ejutla and the Valley of Oaxaca.

FIG. 10.12. Terraced slopes of El Vergel (EJ-EJ-EV-2).

FIG. 10.14. EJ-EJ-BL-3 walled site on far hilltop at right in photograph.

TABLE 10.7. Monte Albán V terrace sites in the Valley of Oaxaca.*

| Subarea | Field site no. | Phase no. | Population | No. of terraces | Average terrace area ($m^2$) |
|---|---|---|---|---|---|
| Central | CE-SMC-SMC-6+ | 2-11-58 | 775 | ? | — |
| Central | CVOS-3 (Pueblo Nuevo) | 2-11-23 | 801 | 7 | 246.0 |
| Central | CVOS-67, 68 | 2-11-2 | 68 | 9 | 340.0 |
| Central | Loma de la Montura | 2-11-244 | 800 | 52 | 411.6 |
| Central | Monte Albán | 0-11-1 | 13,573 | 367 | — |
| Etla | ET-SJB-SG-1 | 1-11-415 | 49 | ? | — |
| Etla | ET-SLC-GH-1 (Loma del Trapiche) | 1-11-363 | 123 | 15 | 726.5 |
| Etla | Saa Yu'cu (Monte Albán/Cuilapan) | 1-11-34 | 288 | ? | — |
| Ocotlán | Jalieza (OC-STJ-STJ-1, 4, 5) | 3-11-259 | 6,649 | 690 | 306.9 |
| Ocotlán | OC-SAZ-SAZ-6 | 5-11-2 | 76 | 10 | 89.6 |
| Ocotlán | OC-SJP-EP-8 | 5-11-166 | 297 | ? | — |
| Ocotlán | OC-SJP-SJP-8 | 5-11-194 | 78 | ? | — |
| Ocotlán | OC-TIL-TIL-1 (Tilquiapan) | 5-1-45 | 953 | 44 | 359.3 |
| Tlacolula | OC-STJ-SCJ-1 | 4-11-141 | 1,192 | 68 | 136.4 |
| Tlacolula | TL-MAT-MAT-81 (El Palmillo) | 4-11-874 | 1,462 | 495 | 43.8 |
| Tlacolula | TL-MIT-MIT-2 (Mitla Fortress) | 4-11-696 | 1,478 | 197 | 44.9 |
| Tlacolula | TL-MIT-MIT-35 (Corral de Piedra) | 4-11-688 | 1,785 | 238 | 49.9 |
| Tlacolula | TL-MT-MT-100 | 4-11-381 | 190 | 22 | 145.5 |
| Tlacolula | TL-MT-MT-15 | 4-11-379 | 278 | 33 | 137.2 |
| Tlacolula | TL-SAV-SAV-9, 10 | 4-11-406 | 1,222 | 21 | 647.3 |
| Tlacolula | TL-SJT-SJT-50 | 4-11-140 | 608 | 80 | 130.4 |
| Tlacolula | TL-SJT-SJT-6 (S. J. Teitipac) | 4-11-114 | 2,051 | 55 | 436.1 |
| Tlacolula | TL-SLA-SLA-2 (Guirún) | 4-11-828 | 2,828 | 278 | 99.8 |
| Tlacolula | TL-SLQ-SLQ-3 | 4-11-590 | 432 | 20 | — |
| Tlacolula | TL-SLQ-SLQ-8 (Quiavini) | 4-11-628 | 1,436 | 28 | 272.5 |
| Tlacolula | TL-SLQ-SLQ-6 | 4-11-136 | 158 | ? | — |
| Tlacolula | TL-SST-SST-23 (S. S. Teitepac) | 4-11-887 | 1,196 | 44 | 309.0 |
| Tlacolula | TL-SST-SST-30 | 4-11-95 | 318 | 17 | — |
| Tlacolula | TL-TCH-TCH-50 (Tlacochahuaya) | 4-11-252 | 504 | 25 | 130.0 |
| Tlacolula | Cerro Paguia (TL-TEO-TEO-29, 65) | 4-11-161 | 765 | 77 | 160.2 |
| Tlacolula | TL-TEO-TEO-5 (part of Macuilxochitl) | 4-11-401 | 1,686 | 64 | 159.4 |
| Tlacolula | TL-TEO-TEO-7 | 4-11-412 | 150 | ? | — |
| Tlacolula | TL-TEO-TEO-8 (part of Macuilxochitl) | 4-11-397 | 338 | ? | — |
| Tlacolula | TL-TEO-TEO-61 | 4-11-520 | 240 | ? | — |
| Tlacolula | TL-TEO-TEO-9 (part of Macuilxochtl) | 4-11-392 | 278 | ? | — |
| Tlacolula | TL-TL-SMT-2 (Tlalpazola) | 4-11-373 | 748 | ? | — |
| Tlacolula | TL-VDO-SMV-4 (S. Miguel del Valle) | 4-11-643 | 1,578 | ? | — |
| Tlacolula | TL-VDO-VDO-5 | 4-11-676 | 45 | ? | — |
| Valle Grande | ZI-SAT-AB-10 | 3-11-373 | 25 | 3 | — |
| Valle Grande | ZI-SAT-SAT-8 | 3-11-440 | 53 | ? | — |
| Valle Grande | ZI-SBM-SCM-21, 22 (Mixtepec) | 3-11-324 | 285 | 59 | 219.3 |
| Valle Grande | ZI-SCM-SCM-8 | 3-11-338 | 18 | ? | — |
| Valle Grande | ZI-SCM-TR-1 | 3-11-333 | 31 | 7 | 449.9 |
| Valle Grande | ZI-SCM-TR-8, 16 | 3-11-380 | 191 | ? | — |
| Valle Grande | ZI-SCQ-SCQ-20 | 3-11-239 | 58 | ? | — |
| Valle Grande | ZI-SMA-SMA-29 | 3-11-471 | 267 | 16 | — |
| Valle Grande | ZI-SMA-SMA-40 | 3-11-480 | 18 | 3 | — |
| Valle Grande | ZI-SMA-SMA-5, 41 (El Choco) | 3-11-451 | 1,627 | 178 | 278.7 |
| Valle Grande | ZI-SMA-SMA-8 | 3-11-441 | 25 | ? | — |
| Valle Grande | ZI-VDF-VDF-5, ZI-SCM-SCM-6 | 3-11-358 | 793 | ? | — |

* Data summarized from Oaxaca survey publications (Blanton et al., 1982, apps. I and X; Kowalewski et al., 1989, apps. I and VII; Feinman & Nicholas, 2004a, apps. 4.A, 5.A, and 6.A).

over half were found at Taniche, where they were being made. Of the remaining obsidian points, 25% are from defensibly located settlements.

In Monte Albán IIIA, terrace sites in the two valleys were more often large settlements with tightly nucleated concentrations of terraces. The terraces, which likely sustained domestic dwellings, were generally compact and interconnected. Life in these nucleated settlements over generations almost certainly required high degrees of cooperation and heavy investments of human capital (Kowalewski et al., 2006). A select set of sites in both valleys (and a greater number of them in the neighboring Mixteca Alta) retained this basic community pattern in the Postclassic (Monte Albán V). Yet large, compact hilltop terrace settlements in Oaxaca and Ejutla were undoubtedly rarer than they had been during Monte Albán's height; the partial shift from this way of life likely may reflect a Monte Albán V pattern of community organization that likely was somewhat more ephemeral and dispersed with lower cooperative investments in sustainable communal features, such as terrace walls and the paths that bridged and followed them.

## Public Architecture

Monte Albán V ceramics are present on mounds or other structures at 31 sites in the Ejutla Valley (Table 10.5). At many of these sites, there were only one or two low mounds, similar to

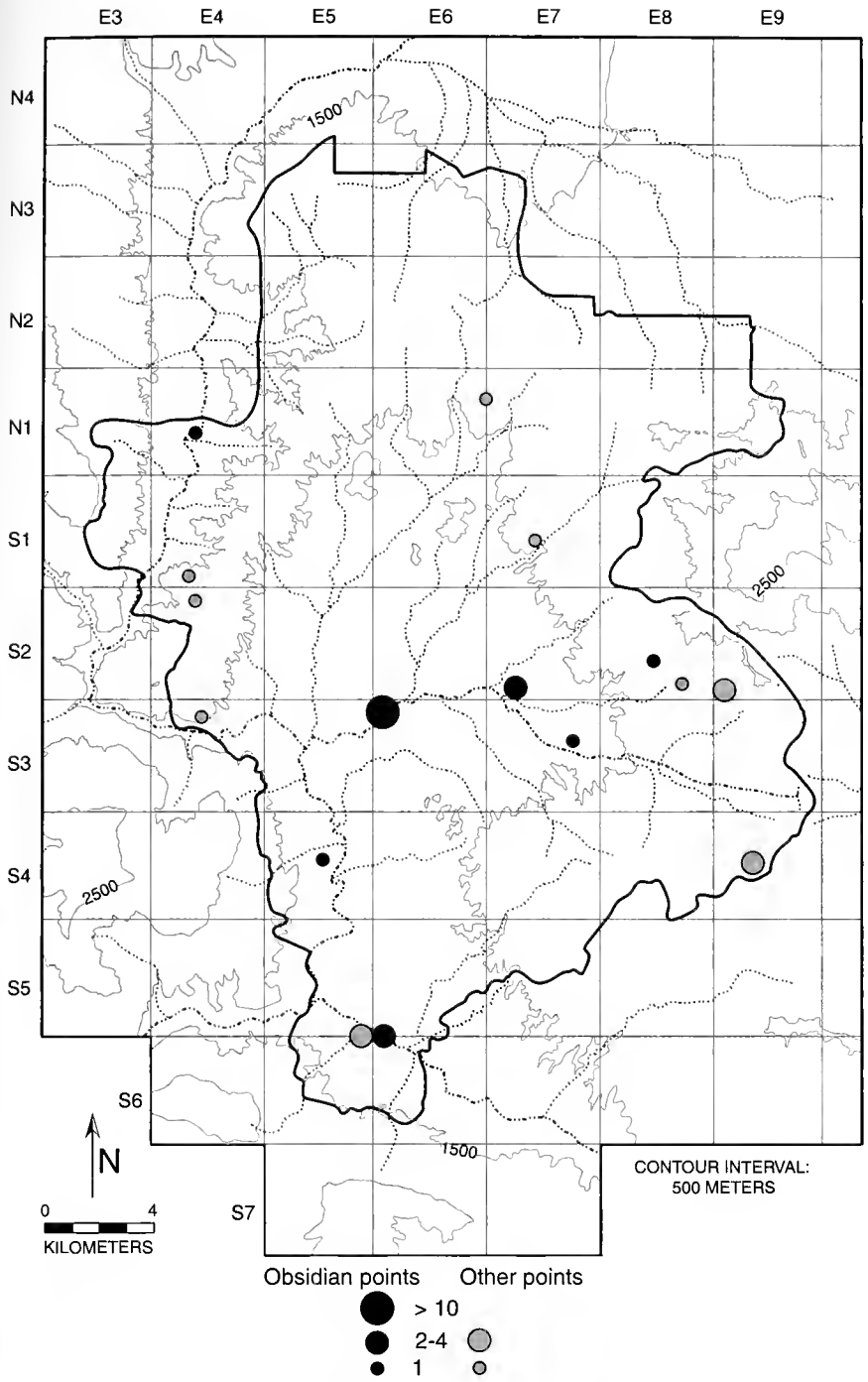



FIG. 10.15. Distribution of projectile points in Ejutla in Monte Albán V.

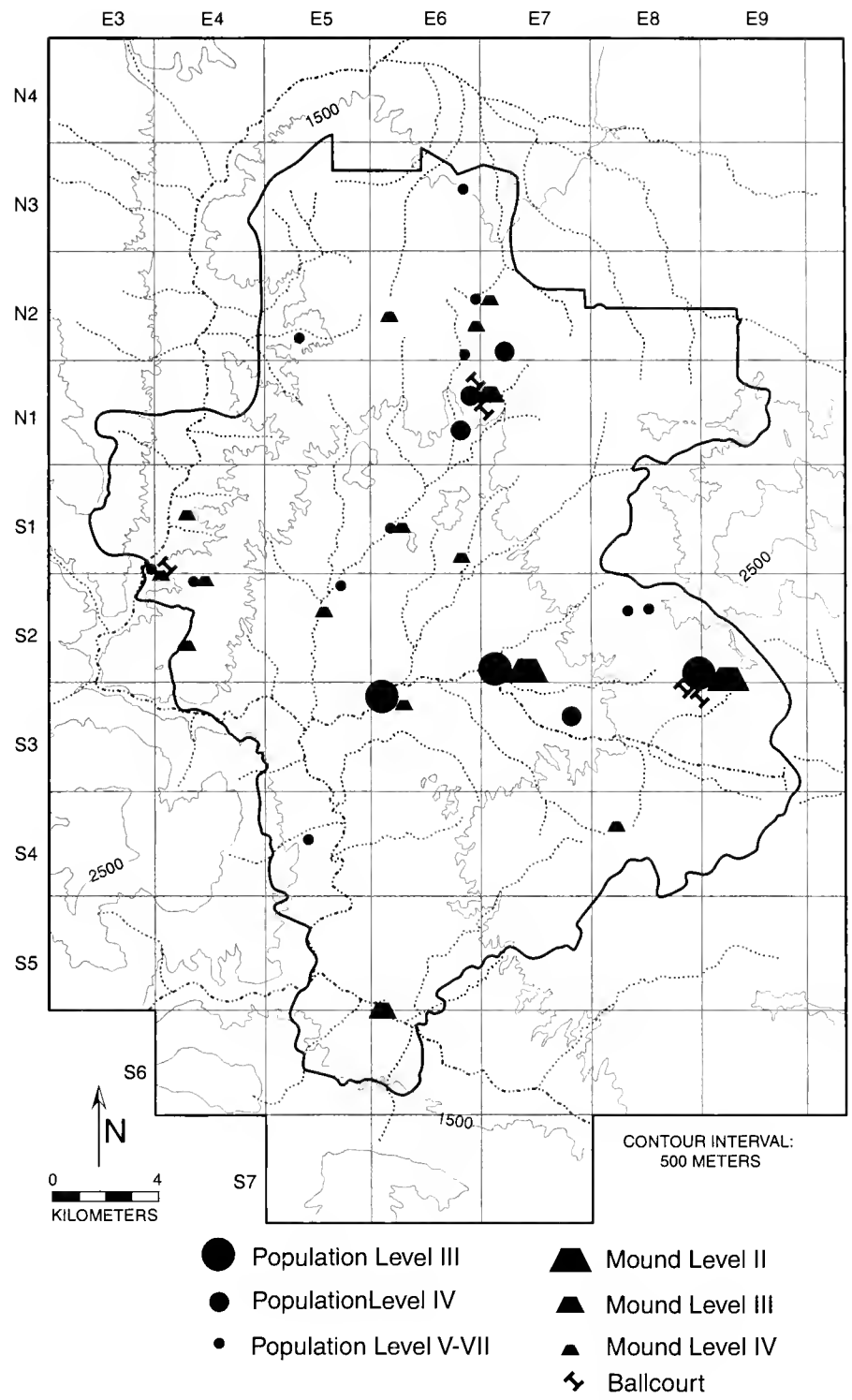



FIG. 10.16. Monte Albán V ballcourts, mound and population centers in Ejutla.

the Valley of Oaxaca. There are only 16 sites in Ejutla with two or more mounds at least 1 m tall that we might consider to have been civic-ceremonial centers. The total mound volume is 140,734 $m^3$, less than in IIIA but considerably higher than in Monte Albán IV. Over half of that volume (80,000 $m^3$) is at the Ejutla site (V-189), and most of that architecture clearly was constructed much earlier. Three other sites, Yogana (V-350), Coatecas (V-218), and El Vergel (V-69), also contain substantial architecture that, although clearly in use during Monte Albán V, most likely was constructed in earlier periods. These four sites constitute the top two levels in the Ejutla mound hierarchy (see discussion below). The total volume of mounds that can be dated solely to Monte Albán V is much less, only 11,315 $m^3$. This great difference between single-component and total mound volume is much greater than in prior periods, indicating that mounds newly constructed in Monte Albán V tended to be small. Yet at several sites, large formal architectural groupings, including a ballcourt, were constructed. These sites, combined with the sites that reused earlier architectural complexes, clearly stood out as impressive civic-ceremonial centers among the many small sites dispersed across the landscape.

Five of the eight ballcourts we located during the survey of Ejutla were constructed or in use during Monte Albán V (Fig. 10.16), more than for any other subregion of the Valley of Oaxaca at that time. A second ballcourt was constructed at two large sites in Ejutla, either to an existing architectural complex (El Vergel; Appendix IX, Fig. 9) or in a new location (Coatecas; Appendix IX, Fig. 1a). At both sites, the earlier ballcourt was constructed during Monte Albán IV, and in both cases, the new ballcourt was larger than the previous one. At Coatecas, the second ballcourt was much more formal; it formed one side of a closed plaza group consisting of four mounds (Fig. 10.17). The fifth ballcourt, at EJ-SAZ-SAZ-9 (V-243; Appendix IX, Fig. 35), appears to have been constructed during Monte Albán IIIA and then reused in Monte Albán V, when the site reached its greatest extent. This latter ballcourt is more like the earlier courts at El Vergel and Coatecas than the two that definitely were constructed in Monte Albán V. As we have suggested elsewhere (Feinman & Nicholas, 2011b; see also Chapter 8), the construction of these later ballcourts in Ejutla may reflect efforts by emerging local petty-state rulers for legitimation and the negotiation of intrapolity relations with other leaders.

In contrast to ballcourts (only three date to Monte Albán IIIA), there were many fewer plazas at Monte Albán V sites

FIG. 10.17. Coatecas (EJ-CA-CA-1) ballcourt (on left) and adjacent plaza (on right).

compared to IIIA sites (12 vs. 25). Five (42%) of the Monte Albán V plazas in Ejutla were relatively closed (three or four mounds) compared to 14 (56%) in IIIA. This proportion also is lower than for Monte Albán V sites in the Valley of Oaxaca, where two-thirds of the plazas were closed (Blanton, 1989, table 13.8). These architectural differences likely reflect different organizational strategies employed by elites in each region and changes in Ejutla over time.

To examine the nature of Monte Albán V architecture in Ejutla, we begin with the single-component sites. Of nine single-component V sites with architecture, only four have two or more mounds at least 1 m tall. All four sites are small in terms of both population (119 at the largest) and number of mounds (all are in the lowest level of the mound hierarchy; Table 10.8). In this small sample, there are significant architectural and locational differences. Two of the sites are located in the low piedmont in north-central Ejutla, while the other two are situated on top of high piedmont or mountain ridges near the valley's western and southern edges. The two low piedmont sites also are quite different from each other: EJ-MT-MT-10 (V-49; Appendix IX, Fig. 15) has a very formal, compact group of three mounds around a small plaza. The other site, EJ-MT-MT-11 (V-50; Appendix IX, Fig. 16), includes only two dispersed mounds on the top of a low hill. The mounds at the two ridgetop settlements are associated with a small number of terraces and clearly served defensive functions (see terrace section above). One of these two sites, EJ-EJ-EA-6 (V-320), has two rather large dispersed platforms on the top of a high piedmont knob; their situation on top of the ridge and their encirclement by a series of walls and terraces gives a closed feeling to the architecture. The other site, EJ-LC-AE-7 (V-260), is located on the top of a very steep-sided ridge and has a very small closed plaza surrounded by one structure and three well-defined walls. A low platform at the site is situated some distance away.

At other Monte Albán V sites in Ejutla, public architecture was initially constructed in a prior phase, but these sites continued to be occupied (or were reoccupied) and were larger in V than before. Some of the architecture was reused or even enlarged in Monte Albán V. The most difficult to interpret of these constructions are at the Ejutla site (V-189; Appendix IX, Fig. 6). Although the population of this site was much larger in Monte Albán V than in earlier phases, the construction of all of the mounds was begun earlier (see Chapters 5 and 6; see

TABLE 10.8. Monte Albán V mound hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| Level | No. of mounds | No. of sites | No. of mounds | No. of sites |
| I | 45–90 | 5 | — | — |
| II | 7–22 | 13 | 12–16 | 2 |
| III | 4–6 | 13 | 7–9 | 2 |
| IV | 2–3 | 40 | 2–5 | 12 |
| No rank | 0–1 | 1,470 | 0–1 | 306 |

also Figs. 6.5–6.9). Dating also is a problem since so much of the pre-Hispanic site lies under the buildings of the modern town. Regardless of when the mounds were constructed, the site would have been impressive in the Late Postclassic.

Taniche (V- 176; Appendix IX, Fig. 41) incorporated several separate Late I and IIIA components and was much larger in Monte Albán V than during any other phase (it also is the largest V site in the Ejutla Valley). Architecture at the site, however, includes only two small mounds, both of which were constructed earlier. The lack of definitive pre-Hispanic public architecture at this site could reflect recent plowing since the site is located near rich alluvial fields. In addition, some pre-Hispanic platforms almost certainly were destroyed during the construction of a huge hacienda that stands today in this location. Although positioned adjacent to alluvial land, the Taniche hacienda is raised a bit above the surrounding terrain, strengthening the likelihood that pre-Hispanic construction sits below it (Fig. 2.17). Despite the absence at the site of standing pre-Hispanic architecture, we did find one small area, near the hacienda, where we collected more fancy polychrome sherds (and red on cream) than we recovered in all of the rest of the Ejutla region (Fig. 10.18). Given the location and the volume of decorated pottery recovered, this spot easily could have been where an elite, high-status late pre-Hispanic residence was once located.

EJ-SAZ-SAZ-9 (V-243; Appendix IX, Fig. 35) consists of a small formal grouping of three mounds, including a ballcourt, around a small plaza. At EJ-EJ-LO-11 (V-156; Appendix IX, Fig. 13), a small IIIA occupation with one structure and a very open plaza along the saddle of a ridge were reoccupied in the Late Postclassic, when the settlement spread to the top of the ridge. At EJ-SML-SML-16 (V-257; Appendix IX, Fig. 38), the entire IIIA site, including terraces and three low platform mounds, were reused in Monte Albán V. Although there was only one large platform at EJ-EJ-EJ-42 (V-304), it is by far the largest single structure erected in the Ejutla Valley. Because ceramics from Late I through V were found on the structure, we do not know when it was initially constructed. But the site is much larger in the Postclassic than in any prior phase, and we also collected several pieces of polychrome on the large platform (Fig. 10.19). Given the site's size (a second-tier population center), the structure may have been expanded in Monte Albán V, when the site's importance in the regional population hierarchy increased significantly.

There was definite additional Monte Albán V construction at only two of these sites. These are the two sites with ballcourts we discussed above. Both sites consist of residential terraces and one mound grouping (including a ballcourt) that were initially constructed in Monte Albán IV. Additional terraces and a new mound grouping (including a ballcourt) were constructed at both sites in Monte Albán V. The smaller

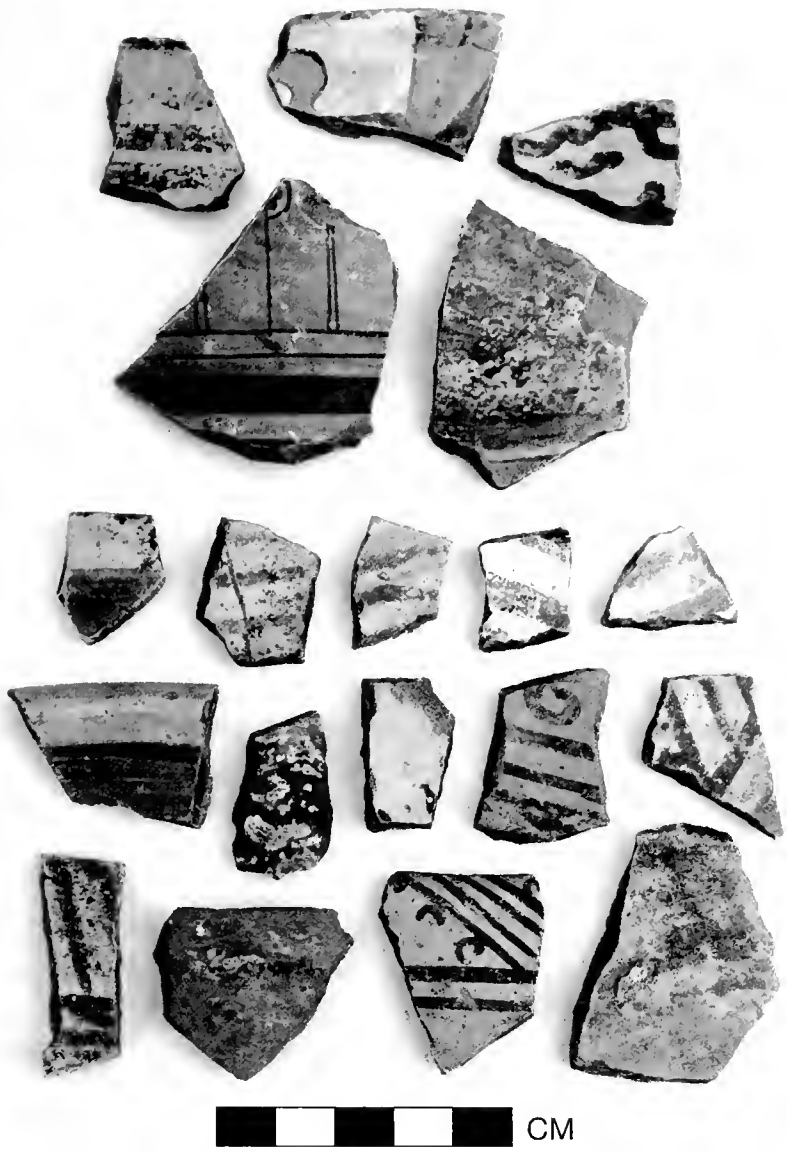



FIG. 10.18. Polychromes from Taniche (EJ-TAN-TAN-2).

FIG. 10.19. Polychromes from large platform at EJ-EJ-EJ-42.

of the two, El Vergel (V-69), has 20 terraces (seven of which also had Monte Albán IV ceramics). The IV mound complex also expanded with the construction of the second ballcourt and a few associated structures. The Monte Albán V occupation appears to have expanded the earlier site without changing the structure of the site as much as happened at the larger site, Coatecas (V-218). At Coatecas, several dispersed scatters of small Monte Albán IV terraces were consolidated into one large site with 140 residential terraces. The older ballcourt, at the base of one ridge, and two other architectural complexes on top of the highest ridge (one consists of two low platforms and the other of a low structure and associated plaza) were incorporated into the Monte Albán V settlement. At the same time, an additional ballcourt was constructed at the base of another ridge, some distance west of the earlier court.

At nine additional sites, the Postclassic occupation clearly reused earlier architecture. All of these sites had reached their largest populations earlier during Monte Albán IIIA. Regardless of the total number of mounds at these sites, in all but two cases, the Monte Albán V occupations consisted of no more than three small mounds. The few low mounds at two sites, EJ-SML-SML-18 (V-240) and EJ-LC-AB-1 (V-267), were occupied in both IIIA and V. At five other sites, EJ-EJ-SMC-7 (V-59), EJ-LC-LL-2 (V-291), OC-SJP-SJP-108 (V-132), EJ-EJ-SMC-6 (V-44), and EJ-LP-LG-1 (V-112), only one or a few of the IIIA mounds were reoccupied, and at two of these sites, the reoccupied mounds were not part of the large main mound complexes at either site. At Yogana (V-350; Appendix IX, Fig. 43) and EJ-EJ-SJ-2 (V-116; Appendix IX, Fig. 19), most of the earlier architecture likely was reused, even though the V populations at these sites were much smaller than they had been in IIIA.

In sum, Postclassic architecture in the Ejutla Valley consisted primarily of small, dispersed mounds or groups of mounds; there were no large monumental complexes like those at several important Postclassic centers in the Valley of Oaxaca. In Ejutla, most public structures that can be attributed securely to Monte Albán V were part of closed mound groups containing three or four structures around a plaza. These plaza groups were small, compact, and quite formal. At several sites, these groups included ballcourts. Yet the extent of the architectural differences between Ejutla and Oaxaca may be magnified by the inclusion of the two Oaxaca sites with the largest, most formal monumental buildings, Mitla and Yagul (Blanton, 1989, p. 440), where Postclassic construction likely occurred prior to AD 1200 (Bernal & Gamio, 1974; Esparza, 1983; Robles García & Juárez Osnaya, 2009). When these sites are removed from the sample, Late Postclassic (post–AD 1200) public architecture at settlements in Ejutla and the Valley of Oaxaca was more similar in nature and scale.

## Hierarchy

In spite of the great increase of population and settlement between Monte Albán IV and V, the mound hierarchy in the Ejutla region increased by only one level, up to three levels (Table 10.8). At the same time, there were four levels in the hierarchy of mound centers in the Valley of Oaxaca. Level I sites in Oaxaca have much more monumental architecture than any settlement in Ejutla (there are no Level I mound sites in Ejutla). These centers were not evenly distributed across the Valley of Oaxaca (Fig. 10.6). All Level I mound centers were located in the central part of the valley and, especially, Tlacolula. The Level II centers were more dispersed (but still unevenly), with the most in Etla and Tlacolula and the fewest in Central, the Valle Grande, and Ejutla. The distribution of the largest mound centers in Tlacolula and Central conforms with ethnohistorical documents that detail the landscape of

mpetitive *cacicazgos* in the Valley of Oaxaca during the Postclassic period (Appel, 1982; Oudijk, 2002, 2008).

The distribution of the mound centers within different settlement clusters (or petty states, or *cacicazgos*) in both valleys is tremendously variable, and they do not form as easily defined clusters of hierarchical relationships as in earlier phases. In Ejutla, for instance, Coatecas (V-218), the settlement with the highest number of mounds during Monte Albán V, does not form a cluster with any other mound site in eastern Ejutla (Fig. 10.16). Neither does Yogana (V-350), a Level III site in southern Ejutla. The westernmost cluster consists of four Level IV mound sites. Only in two settlement clusters is there a larger settlement with mounds—a Level II site in central Ejutla (the Ejutla site) and a Level III site in northern Ejutla (El Vergel)—and two or more Level IV mound sites. There is similar diversity among the small petty states in the Valley of Oaxaca, where some of the smaller *cacicazgos* were centered on smaller, Level III or IV mound centers. With the power vacuum created by the fall of Monte Albán, the local elites who gained power had different strategies for consolidating local areas, which resulted in different patterns of public architecture. These small political units were competitive and not completely autonomous of each other: some local leaders became more powerful than others (as evidenced by larger displays of public architecture) and at least periodically carried sway over other, smaller nearby petty states.

There was much more expansion in the population hierarchies in both valleys. Even though no sites were as large as earlier Monte Albán and Jalieza had been, there was a proliferation of centers in lower levels of the hierarchy (Table 10.9). These centers were dispersed across the landscape in a variety of hierarchical relationships similar to the mound centers (Fig. 10.7). No sites in Ejutla were nearly as large as the Level I and II population centers in Oaxaca, but this fact alone ignores an important change that occurred in the two regions during the transition from Monte Albán IV to V. Contrary to the pattern in the Valley of Oaxaca, the largest Monte Albán V centers in Ejutla were much larger than any of the IV centers in Ejutla had been. While the number of population centers at lower levels expanded in both valleys, in Ejutla a new level of large sites was added to the top. The largest centers in Ejutla (the Ejutla site, Taniche, and Coatecas) correspond to Rank III (midlevel) population centers in Oaxaca, but they are more clearly differentiated from the rest of the Ejutla population centers than are Level III population centers in the Valley of Oaxaca (Fig. 10.20). Three of the four sites in Level IV, EJ-EJ-MT-1 (V-57), El Vergel (V-69), and EJ-EJ-EV-15 (V-83), are within 500 m of each other and could be considered one community that equaled the size of the Level III sites. Each of these large centers corresponds to a different small petty state in Ejutla. These patterns conform to the distribution of centers with mounded architecture (Fig. 10.16). The Ejutla region clearly rebounded during the Late Postclassic, as leaders of the petty states in Ejutla attracted large numbers of people to their centers. They may have developed and benefited from establishing their own, stronger relationships with areas to the south, closer to the Pacific Coast, and may have been at least somewhat independent of the larger *cacicazgos* in Tlacolula and the center of the Valley of Oaxaca.

## Ceramics

With increasing commercialization and greater volumes of goods exchanged both within and between regions across Mesoamerica during the Late Postclassic, the ceramic assemblages in Ejutla and the different subareas of the Valley of Oaxaca were less homogeneous than they had been during Monte Albán IIIA, indicative of an array of different economic networks in the region and beyond. The most ubiquitous Postclassic pottery in the Valley of Oaxaca are G-3Ms, a thin, well-fired, hard, burnished grayware most often used to make a variety of bowl forms and water jars. Analyses of ceramic pastes have shown that these vessels were made in many different locations across the Valley of Oaxaca, some of which were then widely traded (Feinman et al., 1989, 1992). Although many of the different G-3M forms are broadly found across the valley, their distributions are not uniform. For example, the highest concentrations of hemispherical G-3M bowls are present in Tlacolula, composite silhouette bowls are more heavily represented in the Central subregion and Ocotlán, and low, differentially fired bowls are heavily concentrated in Etla (Feinman et al., 1989, 1992; Kowalewski et al. 1989, pp. 351–352). Ceramic types made in other pastes, though less prevalent, show similar nonuniform distributions (Kowalewski et al., 1989, pp. 352–353). Clearly, many communities in this valley system made pottery (Kowalewski et al., 1989, pp. 348–355), with individual potters tending to focus more on specific varieties and forms that likely then were more prevalent at nearby settlements. These different ceramic types, among other goods, were exchanged through fluid commercial networks that transcended petty-kingdom boundaries, including Ejutla and areas beyond the Valley of Oaxaca (Appel, 1986; Finsten, 1996). Compared to the Classic period, topographic impediments may have had a lesser role in defining exchange/market networks.

TABLE 10.9. Monte Albán V population hierarchy in Oaxaca and Ejutla.

| | Valley of Oaxaca | | Ejutla Valley | |
|---|---|---|---|---|
| **Level** | **Population** | **No. of sites** | **Population** | **No. of sites** |
| I | 11,504–13,831 | 3 | — | — |
| II | 6,324–6,649 | 3 | — | — |
| III | 1,192–3,430 | 21 | 2,358–2,970 | 3 |
| IV | 736–953 | 16 | 665–826 | 4 |
| V | 486–665 | 17 | 444–580 | 4 |
| VI | 308–454 | 23 | 355–373 | 3 |
| VII | 204–297 | 33 | 213–277 | 4 |
| No rank | 8–199 | 1,425 | 8–152 | 304 |

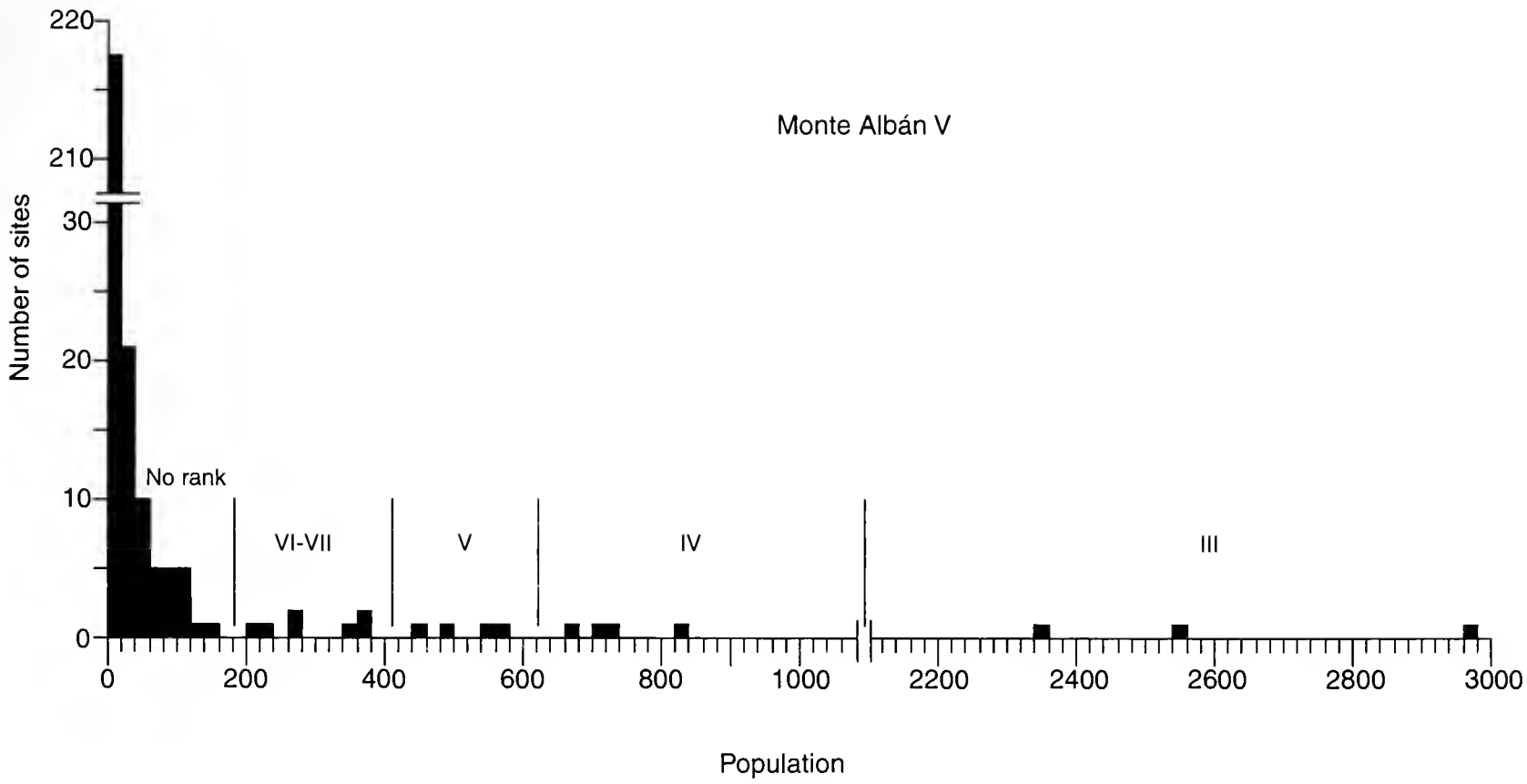



FIG. 10.20. Monte Albán V population histogram for Ejutla.

## Ceramic Distributions

Throughout the sequence, ceramic assemblages in Ejutla tended to be most similar to those in southern Valle Grande; however, during Monte Albán V, there were more exceptions to this general pattern. Part of the diversity in Ejutla is related to differences in the ceramic assemblages in Ocotlán (to the east) and the southern tip of the Valle Grande around Ayoquezco (to the west); some ceramic types that are abundant near Ayoquezco are much less common in Ocotlán, indicating that these areas participated in distinct spheres of exchange. The shifting importance of the two main linkages of interaction and trade into the Ejutla region from the north along one or both of these routes is another important factor in addition to the more fluid networks of interaction and exchange that existed during the Late Postclassic.

The two most common G-3M forms in Oaxaca, T1104 (hemispherical bowls) and T1105 (composite silhouette bowls), are widespread in Ejutla (Figs. 10.21 and 10.22). Although those two forms are more densely concentrated in different arms of the Valley of Oaxaca (T1104s to the east and T1105s to the west), they are common in all settlement clusters in Ejutla. Two other G-3M bowls that occur with less frequency in Oaxaca also have patchier distributions in Ejutla. T1106 (outleaned) bowls that occur more densely in western Tlacolula than elsewhere in the Valley of Oaxaca have a more southern distribution in Ejutla (Fig. 10.23). T1107 (differentially fired) bowls that are prevalent only in Etla also are more common in northern Ejutla than elsewhere in the Valley of Oaxaca (Fig. 10.24) despite the distance between these two subregions. One G-3M type, cylindrical bowls (T1108), are slightly more common in Ejutla than Oaxaca.

The distributions of vessels made from other pastes are more variable. Café pottery is most abundant in southern Valle Grande (not including Ocotlán), and most types also are present in Ejutla in at least low densities. One highly decorated type, graphite on orange (T2223), is found almost exclusively in the western part of Oaxaca, especially in the southern tip of

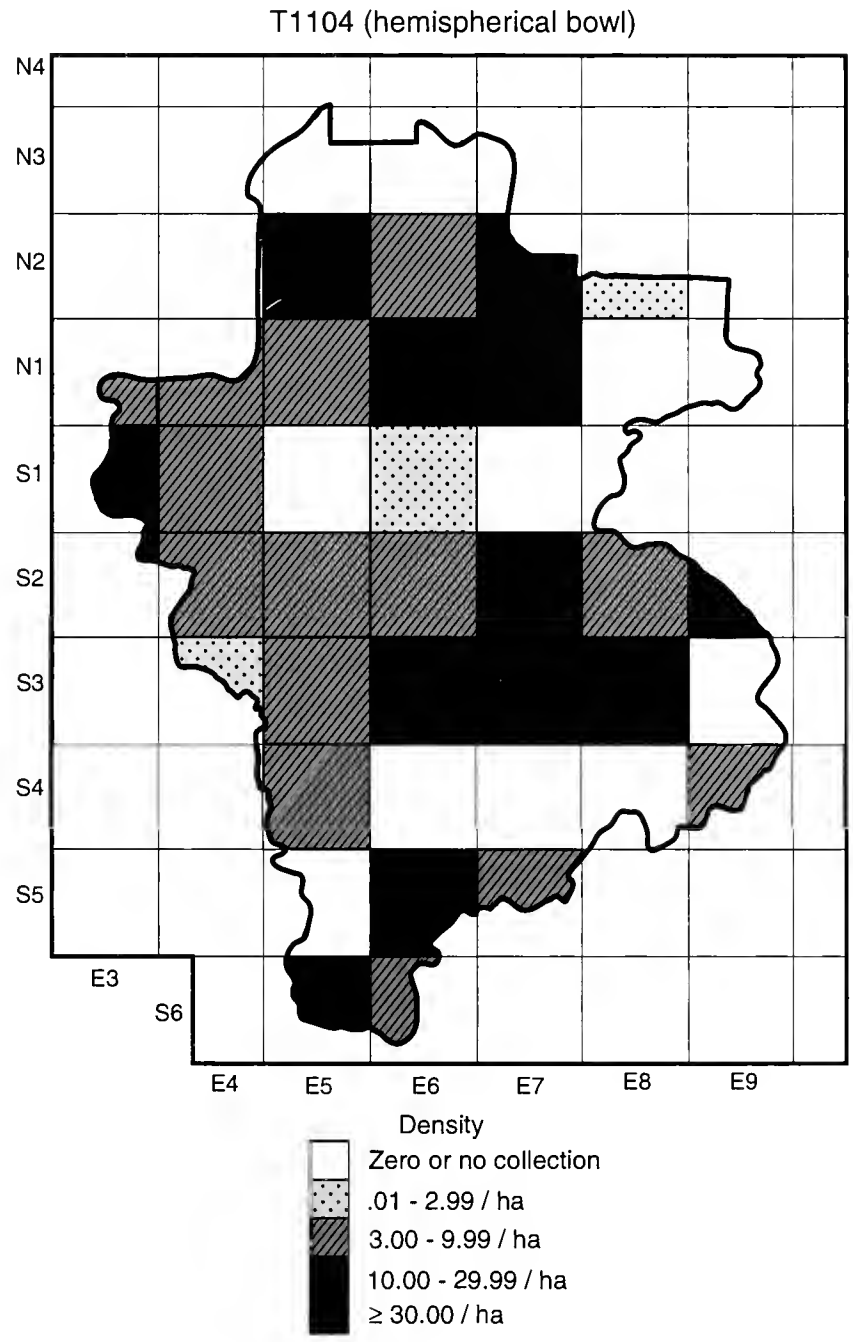



FIG. 10.21. Distribution of hemispherical G-3M bowls (T1104) in Ejutla in Monte Albán V.

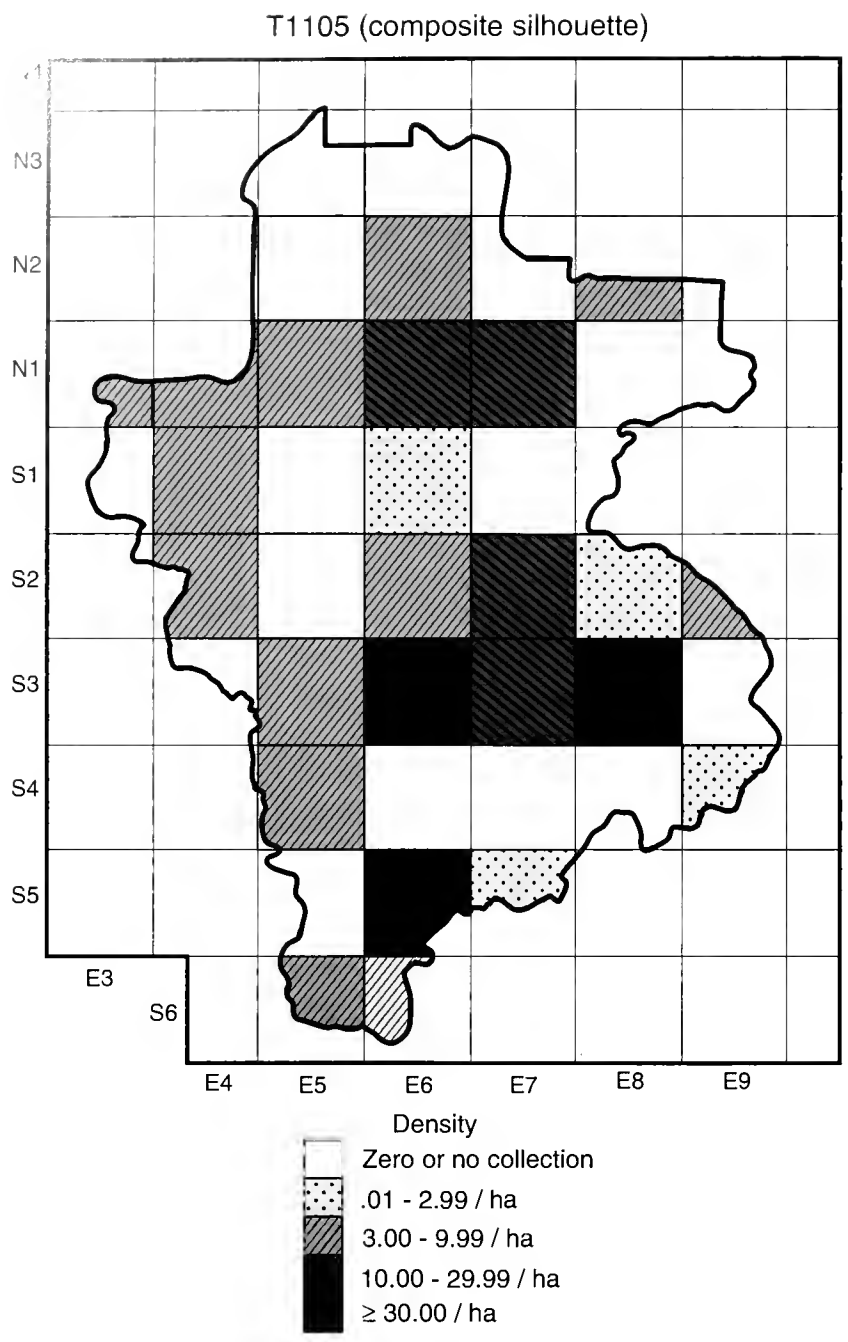



FIG. 10.22. Distribution of composite silhouette G-3M bowls (T1105) in Ejutla in Monte Albán V.

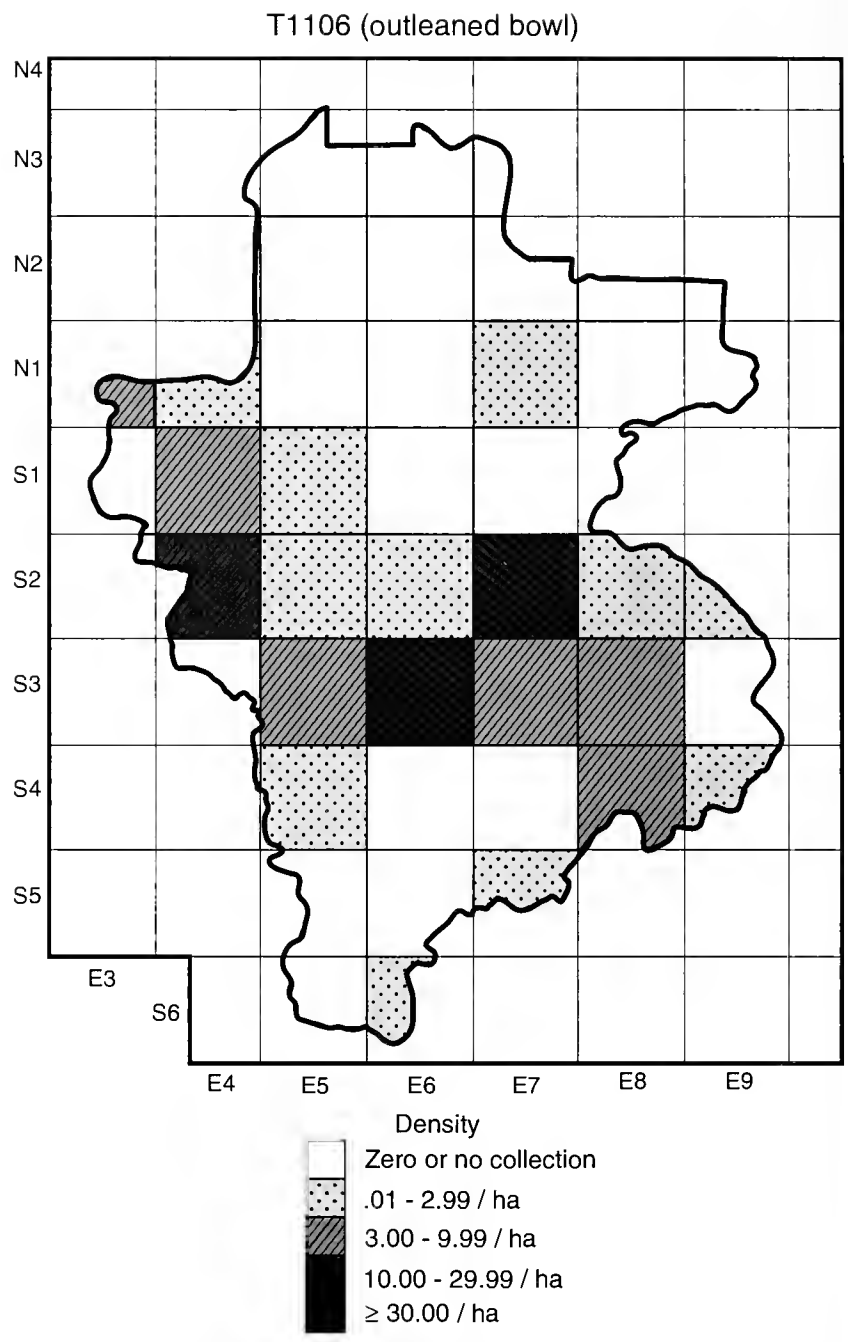



FIG. 10.23. Distribution of outleaned G-3M bowls (T1106) in Ejutla in Monte Albán V.

the Valle Grande (Kowalewski et al., 1989, pp. 352–353). Its distribution in Ejutla also is spotty, with the highest density in western Ejutla (Fig. 10.25), in sites that are closest to Ayoquezco, where it was likely produced (Kowalewski et al., 1989, p. 352).

Other pottery, such as sandy creams (*gris-cremosa*) that are more common in Etla and the Central subarea and rarer in southern Valle Grande and most of Tlacolula, also are rare in Ejutla. An exception is Huitzo red on cream (T5425); there are more pieces of this type (10) at one site in Ejutla (Taniche; in grid square S3E6, Fig. 10.26) than all the Valle Grande and Tlacolula combined (Kowalewski et al., 1989, fig. 10.17). Although polychromes (T5007) are more widespread in Oaxaca than the sandy creams, they also are relatively less frequent in southern Valle Grande and eastern Tlacolula. Again they occur with greater frequency in Ejutla (Fig. 10.27) than either of those two areas. As with Huitzo red on cream, the highest quantities were at Taniche. It seems likely that Taniche was receiving both of these decorated wares through exchange links with the Pacific Coast, with the red on creams perhaps arriving there from the Mixteca Alta where they also were common. The fancy café ware, graphite on orange, was absent at Taniche, so different ceramic wares clearly were circulating through different networks.

Many of the ceramic distributions in Ejutla can be explained by a breakdown of the earlier channel of interaction with Monte Albán through Ocotlán and a reemergence of connections through the Ayoquezco area, following the Atoyac River again. This change also likely is related to the increasing importance of interaction with the coast in Monte Albán V (Brockington, 1973). Based on subsequent excavations at the Ejutla site, we would argue that this change began even earlier and that during Monte Albán V there was a great increase in the number of sites along the Atoyac River in western Ejutla, all the way up into the Ayoquezco area. Based on ceramic distributions, it appears that more interaction followed the river rather than the land route through Ocotlán. In many ways, Ocotlán appears to have been more impoverished than Ejutla during the Late Postclassic. The dense concentrations of fancy pottery at Taniche, which were highly localized, likely represent the residence of a new lord or elite who gained power through closer proximity and interactions with the coast.

### Ceramic Types per Site

During Monte Albán V, there was less variability in the numbers of ceramic types per site among the subareas of the Valley of Oaxaca than for any other phase (Table 10.10). Even

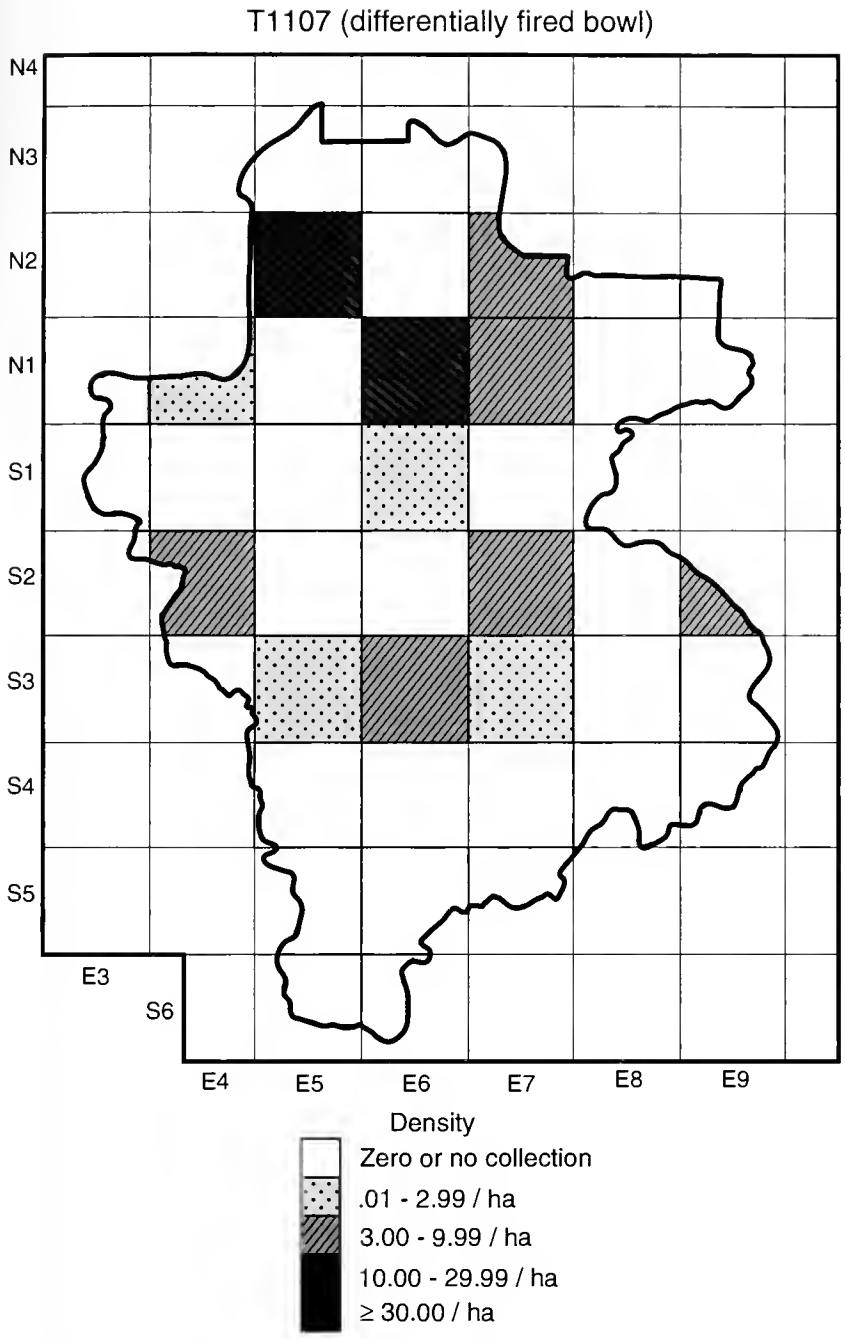



FIG. 10.24. Distribution of differentially fired G-3M bowls (T1107) in Ejutla in Monte Albán V.

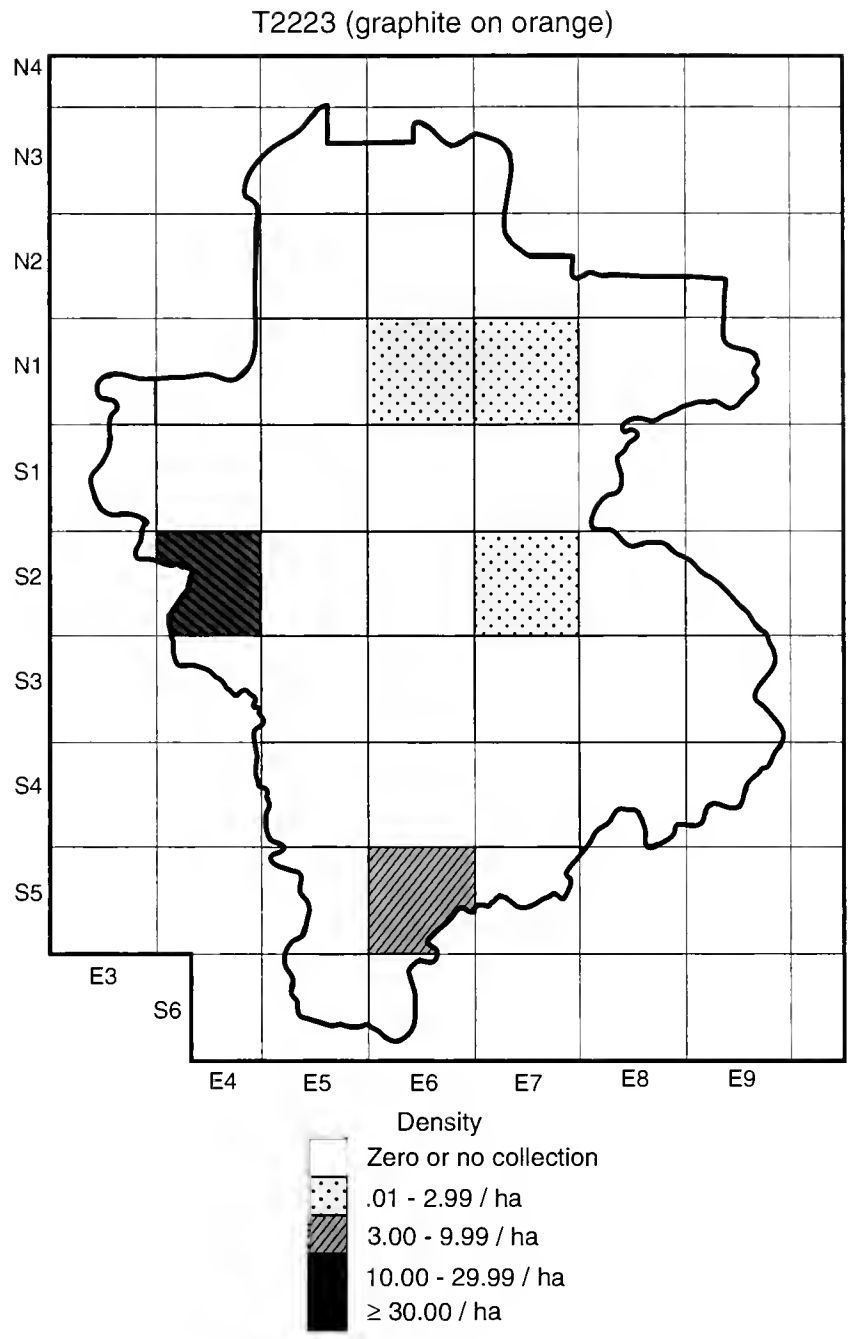



FIG. 10.25. Distribution of graphite on orange bowls (T2223) in Ejutla in Monte Albán V.

though Tlacolula became the new demographic core of the valley, sites there did not have greater ceramic diversity. This lower subregional variability reflects the greater economic integration of the Valley of Oaxaca during the Late Postclassic (e.g., Appel, 1986), with more goods traded over wider areas of the valley through more active marketplace exchange networks and with those networks less truncated by the mountains at the region's edges. Dense mountain populations (higher than in any prior phase) that resided in areas bordering the valley during this era support of this inference (Drennan, 1989, p. 380; Feinman & Nicholas, 1999, p. 185; Finsten, 1996, p. 83; Kowalewski et al., 1983a).

Earlier during Monte Albán IV, the greatest difference in the types per site index between Ejutla and Oaxaca was that mound centers in Ejutla had many fewer types per site than mound centers in Oaxaca; types per site were similar for sites without mounds. The pattern was just the opposite in Monte Albán V; sites with mounds in Ejutla, on average, had just as many types as mound centers in Oaxaca (6.5 vs. 6.4), while settlements without mounds in Ejutla were more impoverished (3.4 types per site) relative to Oaxaca (4.3). Ejutla elites had access to almost as wide a range of pottery as Oaxaca elites (the six largest Oaxaca sites averaged 13.7 ceramic types per site compared to 9.8 at the five largest sites in Ejutla). Increasing commercialization may not have benefited people living in smaller sites without mounds. Small sites without mounds in Tlacolula and Ocotlán also had low numbers of ceramic types per site (Kowalewski & Finsten, 1983).

In many respects, the patterns in the Ejutla region were most similar to Tlacolula; these two areas had intermediate numbers of ceramic types at mound centers, while sites without mounds had the lowest numbers of ceramic types. Mound and nonmound sites in the Valle Grande and Central had higher types per site than similar sites in the other subregions; it may be that elite families in the old core of the Monte Albán polity continued to maintain some of their earlier exchange connections, which also benefited nearby smaller sites.

An earlier study of the distribution of G-3M paste groups across the Valley of Oaxaca provides a partial explanation for these differences. That analysis indicated that ceramic types made in Tlacolula penetrated other parts of the valley, while ceramic types made elsewhere in the valley did not penetrate Tlacolula (Feinman et al., 1989). Powerful individuals and higher volume producers in Tlacolula may have affected trade links enough to keep competing wares from other parts of the valley from entering the subregion, keeping the average number of types per site down. Ceramic types that likely were made in Tlacolula, as well as others made elsewhere in the valley, were found in Ejutla. Although still peripheral, compared to prior phases, the populace of the Ejutla region may have been more politically autonomous and had a more

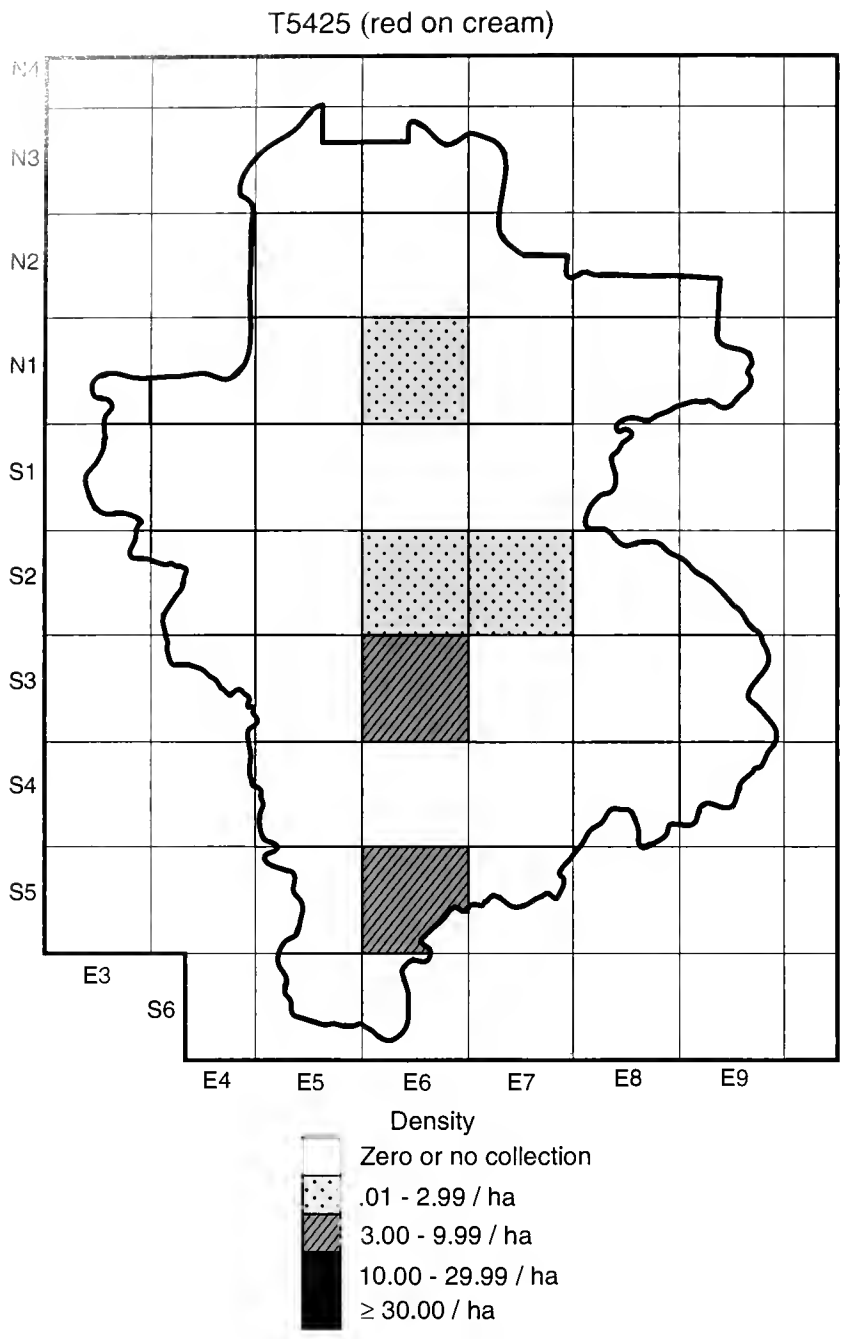



FIG. 10.26. Distribution of red on cream bowls (T5425) in Ejutla in Monte Albán V.

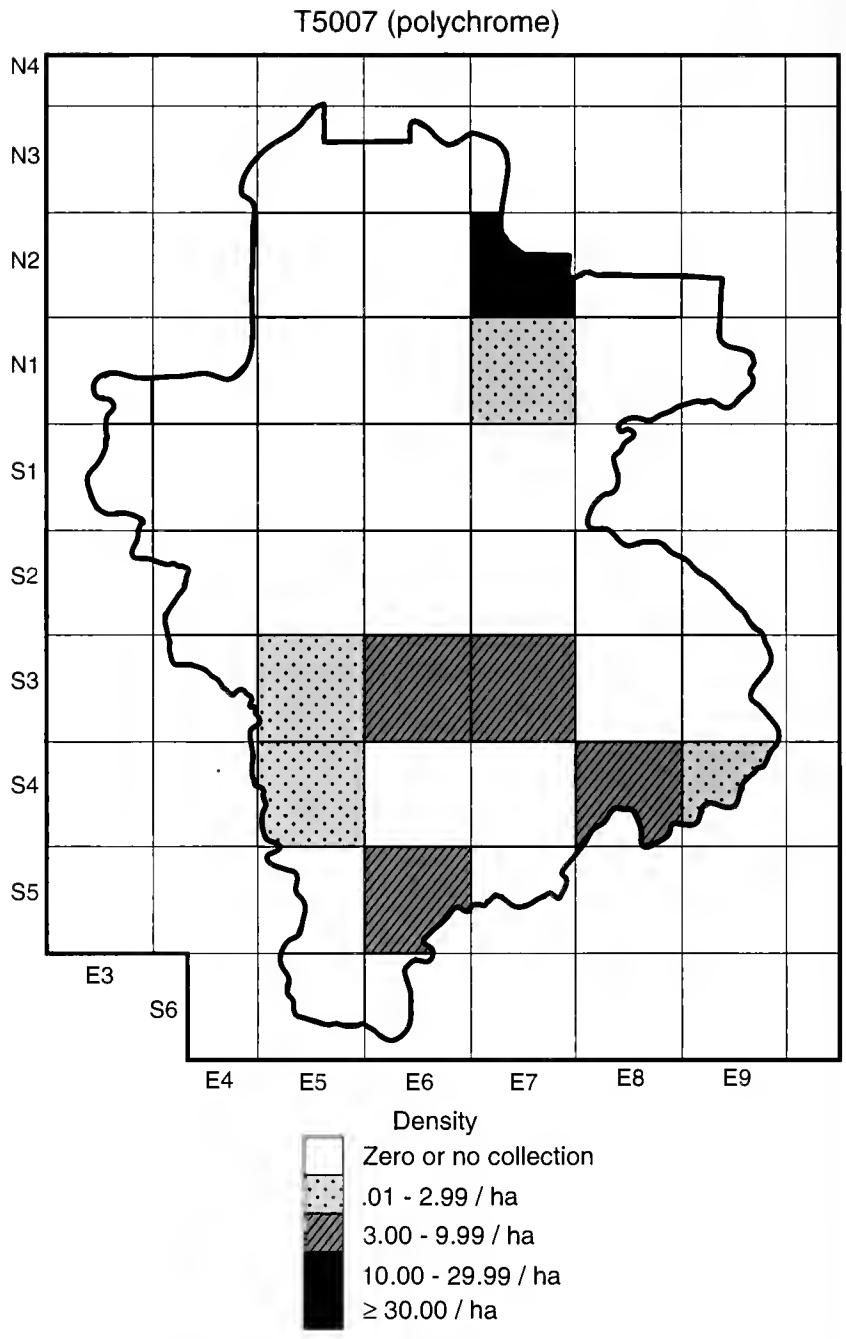



FIG. 10.27. Distribution of polychrome bowls (T5007) in Ejutla in Monte Albán V.

even footing (in regard to its own long-distance exchange links) relative to the populations of the subregions of the Valley of Oaxaca.

A final consideration of the types-per-site index concerns its correlation with the other indicators of hierarchy. While the overall correlation between population and ceramic types per site in Ejutla is only $r = .541$, seven of the nine sites with more than eight types per site are population centers (including the four largest centers). The two other sites with high types per site are located at the southern edge of Ejutla, not the northern edge that is closer to the Valley of Oaxaca, as was the case in the earlier phases (Early I through II). This again may point to the increased importance of commercial networks linking Ejutla with the coast.

TABLE 10.10. Average number of ceramic types at Monte Albán V sites in Ejutla and Valley of Oaxaca subareas.

| | Types per site | Sites with mounds | Sites without mounds |
|---|---|---|---|
| Ejutla Valley | 4.4 | 6.5 | 3.4 |
| Oaxaca Valley | 4.8 | 6.4 | 4.3 |
| Etla | 4.7 | 5.8 | 3.9 |
| Central | 5.4 | 7.8 | 5.1 |
| Valle Grande | 5.0 | 6.5 | 4.9 |
| Ocotlán | 5.0 | 13.0 | 3.1 |
| Tlacolula | 4.4 | 6.2 | 3.0 |

## Obsidian

Obsidian was recorded at 18% of Monte Albán V sites in the Valley of Oaxaca (Kowalewski et al., 1989, p. 309) and 24% of V sites in Ejutla. Although these proportions are lower than for other phases, the total (or absolute) number of Monte Albán V sites with obsidian is greater than for any other phase. Larger sites were more likely to have obsidian, so even though larger amounts of obsidian were entering the Valleys of Oaxaca and Ejutla than ever before, this did not translate into greater access to obsidian for all (Kowalewski & Finsten, 1983). We rarely found obsidian at the smallest sites, whose residents did not have the resources to engage in the increasing number of commercial networks.

Over half of the Monte Albán V sites in Oaxaca and Ejutla are single component (≈50% in Oaxaca and 68% in Ejutla), so we have a large sample of obsidian that can definitely be attributed to V (approximately 1,000 pieces in Oaxaca and 283 in Ejutla). In both valleys, this sample includes 33% of the total obsidian recorded on V sites. As during IIIA, there was more obsidian per capita in Ejutla than Oaxaca. Per field location,

there were 0.67 pieces of obsidian in Ejutla compared to 0.39 in Oaxaca, and there were 14.2 pieces per 1,000 people in Ejutla compared to 6.4 in Oaxaca. Even in Tlacolula, where we recovered more evidence of obsidian working, the per-capita consumption of obsidian was less than half that of Ejutla (7 pieces per 1,000 people). Ejutla continued to engage in obsidian exchange networks that were distinct from the Valley of Oaxaca.

The continued and possibly increasing economic autonomy (compared to IIIA) of the Ejutla population during the Late Postclassic also is suggested by changes in the ratio of green-to-gray obsidian. Although green obsidian was less abundant in Oaxaca and Ejutla during IIIA than gray obsidian, this was especially true for southern Valle Grande and Ejutla (Fig. 7.30). During the Postclassic, the amount of green obsidian increased so much that it was more prevalent than gray obsidian in all subregions of the Valley of Oaxaca (Fig. 10.28). Yet this was not the case in Ejutla, where only 25% of the obsidian was green. The relative frequency of green obsidian generally drops with distance from its probable point of entry into the Valley of Oaxaca from the north (from Pachuca or other nearby sources in central Mexico), through Etla. Comparatively little green obsidian reached Ejutla. This drop-off continued across Ejutla, with green obsidian disproportionately more abundant in the north of the region than the south. Although the two northern settlement clusters in Ejutla have less obsidian overall (only 9% of all obsidian attributed to Monte Albán V) than the three clusters in central/southern Ejutla, 21% of the green obsidian was found there. Ejutla continued to obtain higher amounts of obsidian from other sources through exchange networks that did not pass through the center of the Valley of Oaxaca (e.g., Levine et al., 2011).

## Specialized Nonagricultural Production

Evidence of craft activities was found at more Monte Albán V sites in the Valley of Oaxaca than for any other phase

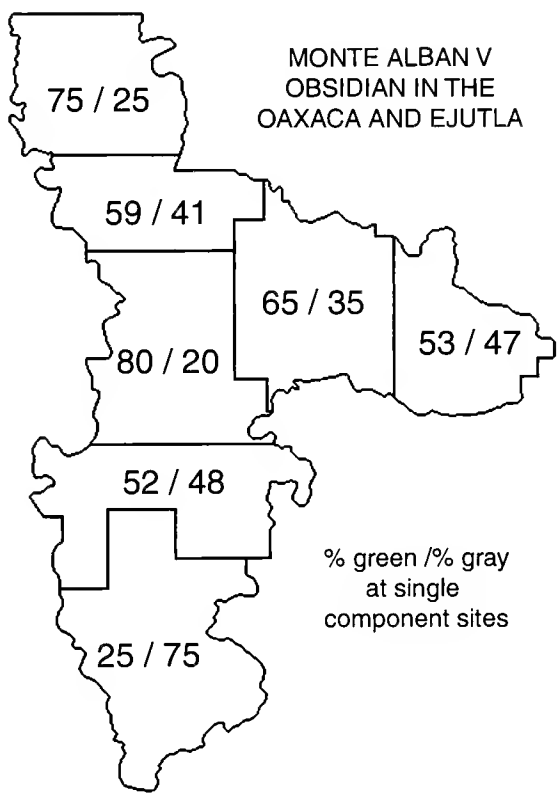



FIG. 10.28. Proportions of green versus gray/black obsidian at single-component Monte Albán V sites in Ejutla and Valley of Oaxaca subregions.

(Kowalewski et al., 1989). Craft production activities were noted at both large and small sites in all parts of the valley and often near the edges of the larger sites. At some sites there is evidence of more than one specialized activity. There also is some clustering of the indicators for craft activities; on survey, we generally found more evidence of nonagricultural production in larger towns located in less agriculturally productive parts of the valley, where people appear to have exploited a range of local resources (e.g., clay, stone, fiber-bearing plants, and animals) to produce a range of goods for exchange. Where good farmland was plentiful, we generally found less evidence of craft production. With increasing corn yields, residents of those areas could have grown substantial surpluses to exchange in markets for goods produced by craft specialists of all kinds. The highest concentration of craft activities occurred in Tlacolula, the most densely settled and least agriculturally reliable part of the valley (Fig. 10.29). Lithic working was the most common specialization noted, followed by obsidian working and ceramic production. A sample of these sites is discussed in Kowalewski et al. (1989, pp. 348–364). Although spinning and weaving undoubtedly were important economic activities, spindle whorls and other weaving implements are rarely found in appreciable numbers on the surface.

The only definite craft specializations we identified from surface remains in Ejutla that pertain (or likely pertain) to the Postclassic are chipped stone, obsidian, and ceramic production. G-3Ms were produced at El Vergel (V-69), one of the two mound centers with two ballcourts, and stone materials were worked there as well. Stone also was worked at two other sites in Ejutla—Coatecas (V-218), the other ballcourt site in eastern Ejutla, and EJ-EJ-CHI-1 (V-21), in northern Ejutla. Obsidian working was clearly identified at only one Monte Albán V site in Ejutla, Taniche (V-176), the largest population center in the region. In one small area in the northern part of the site, we found fields littered with hundreds of obsidian blades, flakes, points, and cores (Fig. 10.30). All of the obsidian is single-component Postclassic. In contrast to the Valley of Oaxaca where green obsidian dominates, 80% of the obsidian at Taniche was light gray, and only 20% was green. Two of three cores are gray, as are over 90% of the flakes, a good indication that gray obsidian was being worked. In contrast, approximately 25% of the blades and more than half of the points were green. The residents of Taniche may have made and exchanged gray obsidian blades and other tools at the same time that they traded for green obsidian tools.

## Human/Land Relationships

During Monte Albán V, the archaeological populations of the Valleys of Oaxaca and Ejutla reached their pre-Hispanic maxima. With political fragmentation, dozens of small petty states came into being, and population was more widely and evenly spread across the landscape. Almost no areas of good farmland were underpopulated as they had been during earlier periods. Increasing maize yields raised the region's "resource-based ceiling" significantly, and the populations of both valleys were far below regional capacities (Table 10.11).

With a higher percentage of good farmland across the region being exploited, potential production soared, and the populations of most valley subregions, including Ejutla, were capable of producing sizable surpluses (Fig. 10.31). The greatest surpluses

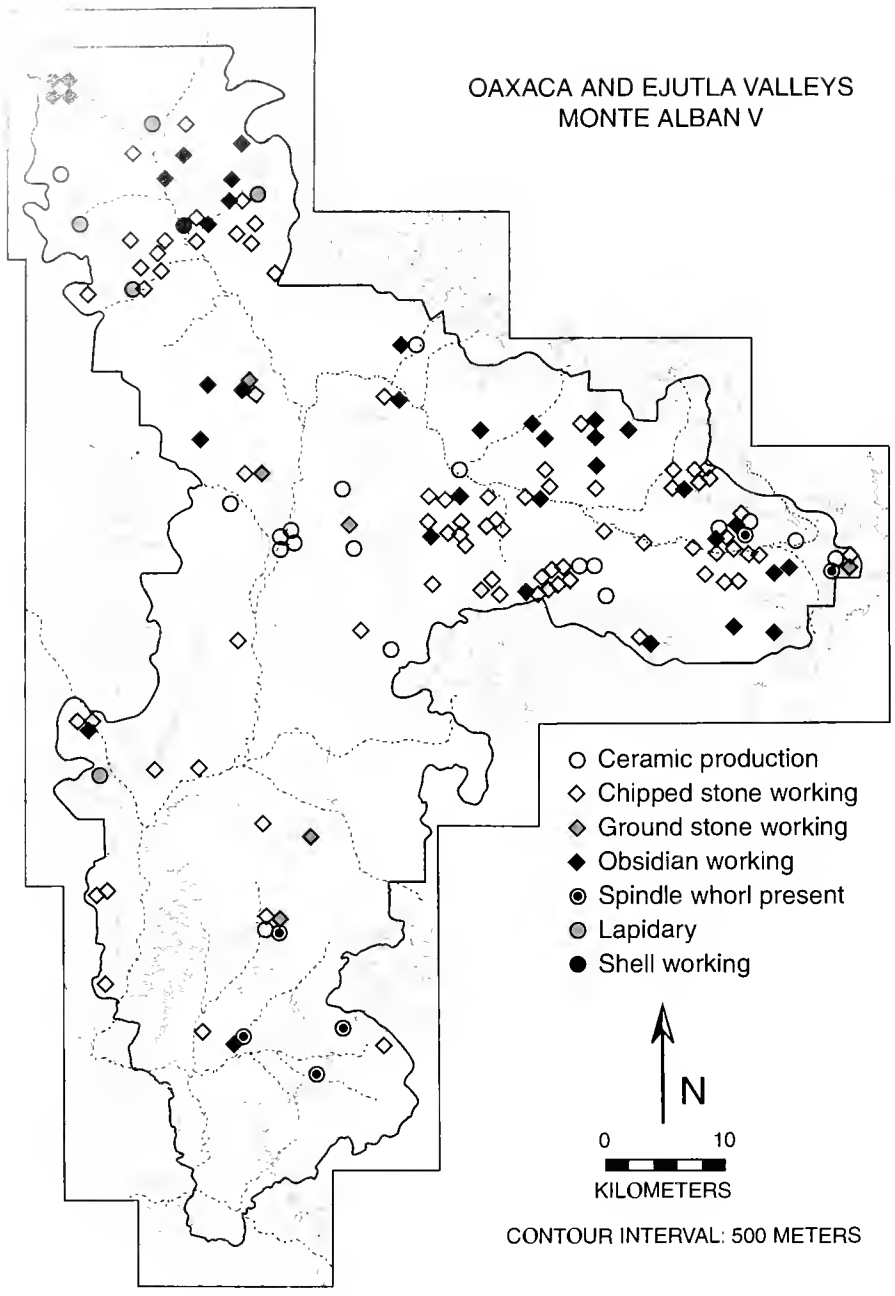



FIG. 10.29. Distribution of specialized activities for Monte Albán V recorded during systematic regional surveys in the Oaxaca and Ejutla Valleys.

FIG. 10.30. Taniche (EJ-TAN-TAN-2) obsidian, including two cores at top.

could have been grown in the western part of the valley, especially in Etla, where communities were located near large patches of well-watered farmland. They likely grew surpluses to be exchanged for nonagricultural goods produced in other settlements or subregions where maize was not as reliable. At least at times, small amounts of surplus grain from the Central Valleys of Oaxaca were sent as tribute to the Aztec empire (Molins i Fábrega, 1956, p. 25; Appel, 1982, pp. 146–147).

Coincidentally, exchange occurred through a series of economic networks, including market exchanges. As a result, people were freer to live/concentrate in areas where maize could not be reliably grown year after year. Some of the densest populations were not located in the areas with the largest expanses of high-quality farmland. In fact, population was more skewed to the drier parts of the valley, where the increasing exploitation of maguey and other xerophytic plants, for a range of products including food and fiber, was an important counter to poor maize yields. Eastern Tlacolula was the most densely settled subregion during the Late Postclassic. Based on maize as a proxy, farmers there would have had a difficult time growing enough food to feed their families; the archaeological population was slightly above the level that could have been supported by the available labor during average rainfall years. Harvest shortfalls would have been further exacerbated in dry years. With economic interdependence and food and craft goods moving through a series of integrated markets, the dry climate of eastern Tlacolula, however, evidently was not an impediment to population growth, and products made from xerophytic plants that grow abundantly there were likely an important part of the process in the rise of Tlacolula as the new demographic core of the Valley of Oaxaca. Connections with Tehuantepec early in the phase (prior to Aztec connections during last pre-Hispanic century or so) may have been another factor in the buildup in Tlacolula as that subregion served as a gateway to the isthmus.

With increasing economic interdependence and flows of goods across the region, Ejutla was more strongly linked into commercial networks that stretched across and beyond the Valley of Oaxaca than ever before. Ejutla could have produced a sizable surplus and likely exchanged that surplus through market exchange for goods produced elsewhere in the region. Although not all economic specializations are equally visible on the surface and issues of ground coverage and other obstructions can affect our identification of craft activities on the surface, we did not find as much evidence of definite Postclassic craft activities at sites in Ejutla as we did in Tlacolula. Ejutla's residents during Monte Albán V may have been more actively engaged in agricultural production for exchange than they had been before.

In Ejutla, potential production during average rainfall years could have been as much as 2.5 times what was needed to feed the local population, higher than at any other time in the pre-Hispanic sequence. All of the settlement clusters in Ejutla could have produced a surplus. During dry years, though, potential crop yields would have been much lower. As much as 25% of the population lived in areas where dry-year maize yields would have been insufficient for the local populace. The highest deficits would have been in eastern and southern Ejutla, where settlement, including the large site at Coatecas, was situated on desiccated ridges and along the Atoyac River where it is deeply incised and not surrounded by much good bottomland. Exchange with better-situated neighbors (the northern part of the Ejutla Valley receives slightly higher rainfall and therefore has higher yields) would have been necessary. The varied commercial networks that connected the

TABLE 10.11. Estimated archaeological, resource-based, and average labor-based potential populations for Ejutla and Valley of Oaxaca subregions in Monte Albán V.

| | Ejutla | Etla | Central | Northern Valle Grande | Southern Valle Grande | Western Tlacolula | Eastern Tlacolula |
|---|---|---|---|---|---|---|---|
| Estimated archaeological population | 19,970 | 15,407 | 20,771 | 24,929 | 23,911 | 41,288 | 40,161 |
| Resource-based potential population* | 112,400 | 136,700 | 62,300 | 136,300 | 119,300 | 106,000 | 46,500 |
| Average labor-based potential population** | 52,100 | 73,400 | 43,800 | 54,900 | 58,800 | 77,200 | 38,400 |

* Based on full exploitation of all agricultural land resources in each subregion.

** Based on available labor supply and equal use of Class I and II land near recorded settlements.

different parts of Ejutla and the Valley of Oaxaca were integral parts of the economy that allowed people to live in agriculturally less productive places where a range of other natural resources could be exploited and turned into raw material and/or finished goods for exchange.

## Summary

The decline of Teotihuacan, Monte Albán, and other Classic period centers in the highlands of Mesoamerica marked the beginning of a long period of political fragmentation, instability, and population reorganization that culminated in a much more heavily populated Late Postclassic landscape of small, competing, semiautonomous states. The proliferation of small polities coincided with increasing commercialization, expansion of marketplace exchange, and increasing economic interdependence as populations expanded across the highlands. These small polities had fluid, changing boundaries, and they engaged in shifting alliances with their neighbors. Until the very late rise of the Aztec empire and their capital at Tenochtitlan, less than a century before the arrival of the Spanish, no one or two large polities dominated the landscape as Teotihuacan and Monte Albán had during the Terminal Formative and Classic periods.

The nature of demographic expansion during the Late Postclassic was much different than during previous episodes of growth. In the Valley of Oaxaca, the first significant expansionary episode was associated with the establishment of Monte Albán in the center of the valley during Monte Albán I; at that time, the greatest population increases occurred at the capital itself and in nearby areas (Blanton et al., 1993, p. 78; Feinman, 1998). The settlement system was highly primate, with one-third of the population residing in the capital. Monte Albán had degrees of political influence over increasingly large portions of the valley, including the Ejutla Valley, during the Classic period.

In sharp contrast, during the Late Postclassic, growth occurred across the Central Valleys of Oaxaca in both large and small settlements as populations reached their pre-Hispanic apices. No one polity regained the collective power, monumental grandeur, or longevity of the Monte Albán state. Instead, there was a competitive landscape of small polities whose leaders used networks of connections to build power (Kowalewski, 2003c, p. 10). Mitla was architecturally impressive, but it never had the political reach of Monte Albán, and its dominance was comparatively short lived. Polity boundaries were more permeable than before, and networks of exchange became sources of revenue for the new small states, whose leaders strengthened and expanded existing connections outside the valley. These networks extended beyond the Central Valleys of Oaxaca to the Mixteca Alta and south to the Pacific Coast (Ball & Brockington, 1978, p. 113). More goods than ever before were moving into and out of the region (Kowalewski et al., 1983a).

The political consolidation of the Ejutla region into a single Valley of Oaxaca polity, as occurred during the Early Classic period, was never matched in the Late Postclassic. Instead, the network of small competing states in highland Oaxaca stretched unbroken from southern Valle Grande into Ejutla. Although the small polities in Ejutla were similar in size, distinct site layouts and settlement patterns in each one provide indications that their internal organization differed. The leaders of each polity had their own strategies of rule and

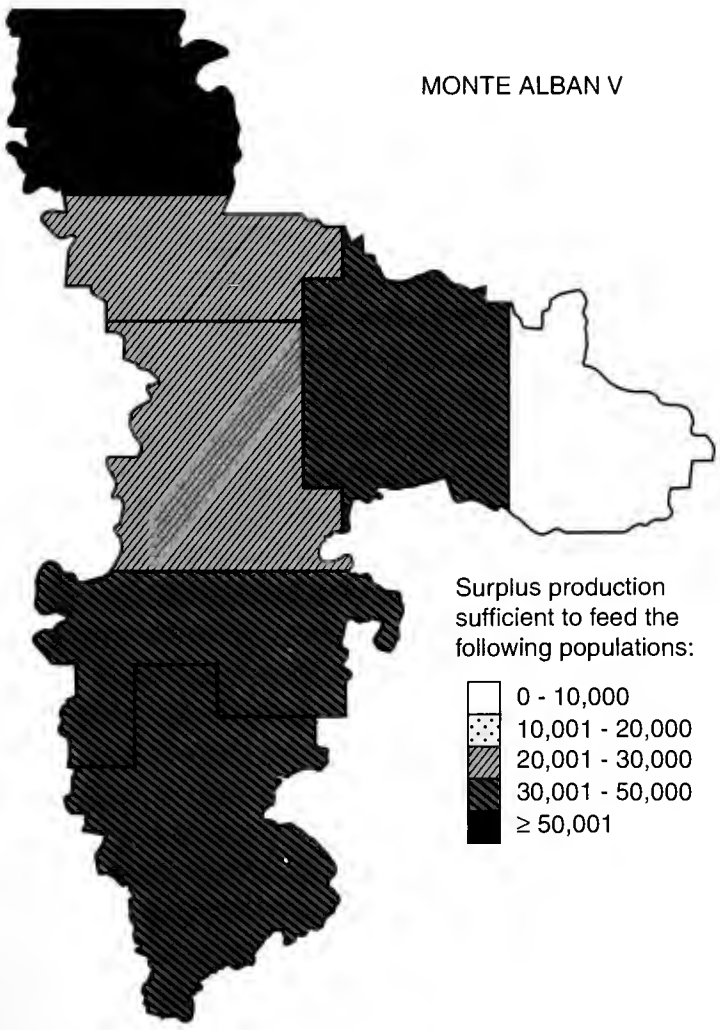



FIG. 10.31. Monte Albán V surplus in Ejutla and Valley of Oaxaca subregions (based on rural producers, Central area does not include Monte Albán's population).

their own networks of exchange that linked them with different parts of the Valley of Oaxaca as well as with coastal areas to the south.

Although important links between the two valleys were not dissolved completely following the fall of Monte Albán, Ejutla was more autonomous than it had been for almost a millennium (Feinman & Nicholas, 1992a). Ejutla was not only part of larger-scale networks that extended far beyond its borders but also a key node in long-distance exchange networks that brought goods and information to the southern part of the Central Valleys of Oaxaca, especially from coastal areas even farther south (White & Barber, 2012). This central role in networks of exchange with areas to the south was always one of the attractions that Ejutla held for Monte Albán's rulers during the Terminal Formative and Classic periods; during the Late Postclassic, Ejutla's leaders were able to exploit these networks to build their own economic power bases to maintain degrees of autonomy and competitiveness with their neighboring polities in the larger valley to the north. The demographic density, agrarian productivity, and general economic vibrancy and connections of Ejutla during the Late Postclassic may have contributed to the significant energies that the conquering Spanish later devoted to the region and to the large size and number of impressive haciendas that they built there (Esteva, 1913; Taylor, 1972; see also Chapter 2).

# Chapter 11: Conclusions

> Hard fact does not reside only at one particular spatial scale; instead, real objects come in different sizes. One's methods and concepts have to be appropriate to the spatial scale of the objective phenomenon... . The most productive insights seem to come when we can combine the results of investigations at various spatial scales.
>
> (Kowalewski, 1990c, p. 208)

To understand a place or region, you must examine the history of that location over time (Braudel, 1973; Smith, 1992b). This volume sketches the pre-Hispanic history of the Ejutla Valley, Oaxaca, Mexico, for roughly three millennia, a past era for which there are only rare documentary sources of relevance, and those few that did survive to the present are at best narrow in focus and sketchy in detail. Our approach is archaeological, reliant primarily on surface collections and field observations of ancient settlements. Whenever possible, we have supplemented those basic data with comparable information from neighboring regions as well as relevant findings from archaeological excavations, the available documents, and a basic vantage on the region's topography, environment, and agrarian resources. Although our core goals in this monograph are descriptive and historical, we also have aimed to draw and reflect on broader theoretical issues when we could and return to some of those here.

Our perspective aligns with a growing number of scholars who, following their studies of regional settlement patterns, have come to realize the importance of adopting multiscalar perspectives on human society and history (e.g., Adams, 1977; Smith, 1983; Parkinson & Galaty, 2009). More specifically, to answer an array of questions about past Mesoamerican social systems and their interactions, there also has been increasing recognition of the necessity of looking at scales larger than single polities or regions (Pailes & Whitecotton, 1979; Blanton & Feinman, 1984; Kowalewski, 1990c, 2004; Whitecotton, 1992; Balkansky, 1998a, 2006; Blanton, 2005). To understand the history of any place, it is becoming evident that you have to look beyond the site and even the region to the macroscale and the networks that linked ancient people to adjacent and distant regions (M. L. Smith, 2005, 2007, 2012). To express it simply, since human networks and affiliations persistently shift, the history of a region and its people can be envisioned and understood only by spatial frames grander than that region. As Edward Schortman (2011, p. 535) has succinctly expressed, "The answer lies in reimaging the world, ancient and modern, less as a plane divided among distinct, nested territorial entities than as a bundle of overlapping networks that often operate with a fine disregard for boundaries." Our understanding of the long-term record of the Ejutla Valley would not have been possible without a consideration of larger-scale contexts and networks. But distributions of resources, land, water, and other local variables also matter. Both vantages are relevant and important for the study of any ancient region; it is impossible to know beforehand how the two scales interrelated over time or when one scale was more important than the other.

Both geographic location (political-economic networks over space) and distributions of resources are important for understanding Ejutla's history, but neither alone is determinative. The contingency of history also matters. Here, we look at both space and resources in the context of time and history to understand the changes that occurred in the Ejutla Valley. Time depth is essential, as both unanticipated consequences and the inertia of prior conditions have a role as we transcend the past and arrive at the present (see also Schortman, 2011, p. 532).

We could not have understood the relatively slow growth in Ejutla during the Formative or why the region's first sedentary settlements were in the area's north without knowing about the rapid demographic takeoff of the Etla arm and the rise of San José Mogote. It would be impossible to understand why population did not grow rapidly in Ejutla before Late Monte Albán I without examining the region's relationship to the powerful polity centered at Monte Albán. At the same time, our study of Ejutla, along with investigations in other valleys peripheral to the Valley of Oaxaca, such as Sola and Cuicatlán (Redmond, 1983; Balkansky, 2002), has increased our understanding of the processes involved in Monte Albán's rise and fall. Monte Albán did not simply engulf comparable "billiard balls" (sensu Wolf, 1982, pp. 6–7) step-by-step. Rather, its hegemonic expansion in the Central Valleys of Oaxaca took place at a slower pace at greater distances. Perhaps, that process occurred in fits and starts. Likewise, Monte Albán's fall affected its hinterland in different ways that reflect both the characteristics of the subregions and the nature of their prior relations with the valley's early monumental center. The nature of Ejutla's Late Postclassic organization is most fully comprehended in the context of the political and economic shifts that took place across Mesoamerica at that time.

We begin this concluding chapter with a broad-brush comparison of the Ejutla Valley and the Valley of Oaxaca, emphasizing overarching patterns and key differences. Although informative, the identification of broad patterns is not enough to understand Ejutla's history. We then expand the spatial scale and time depth to summarize major temporal trends in the Valley of Oaxaca and across highland Mesoamerica with a focus on how they were felt (or not felt) in the Ejutla Valley. We conclude with broader theoretical implications.

## The Ejutla and Oaxaca Valleys

Two things became abundantly clear during the systematic regional survey of the Ejutla Valley. First, in a number of key ways, Ejutla was a lot like the Valley of Oaxaca. As a southern extension of its larger neighbor, it clearly was part of the political, economic, and cultural networks that centered on the Valley of Oaxaca for most of the pre-Hispanic era. The physical features of the archaeological sites in Ejutla were like those we had mapped in Oaxaca, including mound-plaza complexes and I-shaped ballcourts. Sites tended to be in similar environmental locations, and we mapped many terrace sites in Ejutla just as we had in Oaxaca. The ceramics that we observed on the surface of sites in Ejutla clearly belonged to the Valley of Oaxaca ceramic assemblage laid out in *La cerámica de Monte Albán* (Caso et al., 1967) and other sources (Caso & Bernal, 1952; Kowalewski et al., 1978; Blanton et al.,

982, app. VII; Feinman, 1982). Stone artifacts, including obsidian, occurred in similar forms and roughly comparable densities.

Second, Ejutla was not exactly like the Valley of Oaxaca. The Ejutla Valley is much smaller, and settlement densities (Table 11.1) as well as estimated population densities were lower in Ejutla throughout the pre-Hispanic sequence (Table 11.2). Although the Ejutla Valley makes up 20% of the total surveyed area in the combined Oaxaca–Ejutla region, less than 10% of the region's population resided in Ejutla, and that was only during the two phases, Monte Albán IIIA and V, when Ejutla's populations were highest (Fig. 11.1). We recorded fewer large sites in Ejutla, and throughout most of the sequence, lower proportions of Ejutla's population resided in large urban centers (Table 11.3). Approximately 75% of all sites in both valleys were occupied during only one phase, and in most cases these sites were small. The remaining 25% were multicomponent and tended to be larger, often with monumental architecture. Yet in Ejutla, these localities averaged just over three phase components per site compared to over six in Oaxaca (Feinman & Nicholas, 1990a, p. 221). Centers of demographic and political power in Ejutla were shorter lived than their counterparts in the Valley of Oaxaca.

No site in Ejutla ever came close to matching Monte Albán in its maximal size and monumentality. The density of monumental architecture in Ejutla is only half that in the Valley of Oaxaca (approximately 250 vs. 2,400 mounds, or 0.5 mounds per km$^2$ vs. 1.1; Blanton, 1989, p. 409). Prehispanic sites in Ejutla have fewer mounds (0.6 vs. 0.9 mounds per site), and the mounds are smaller and lower (average height of 2 m in Ejutla and 3 m in Oaxaca during the Classic period; 1.5 m vs. 1.9 m during the Late Postclassic). Terrace sites were smaller. Some pottery sherds appeared to be local variants of Valley of Oaxaca ceramic types, and we observed fewer of the earliest (Early/Middle Formative) ceramic varieties. Other materials, especially marine shell, were much more abundant on the surface in Ejutla than in Oaxaca.

In spite of many characteristics in which Ejutla could be interpreted as just a smaller version of its larger neighbor, it was not a simple microcosm of the Valley of Oaxaca. Although Ejutla was influenced by events and networks emanating from the Valley of Oaxaca, it has its own history. Demographic and settlement pattern differences between the two regions varied greatly over time (Tables 11.1 and 11.2). During the Early and Middle Formative periods (Tierras Largas, San José, Guadalupe, and Rosario phases), population densities in Ejutla were almost an order of magnitude lower than in the Valley of Oaxaca; later in the sequence (in Monte Alban IIIA and V), population densities in Ejutla were as much as half of what they were in Oaxaca. Although the Ejutla region was settled later and at lower population densities than the Valley of Oaxaca, the nature of the pre-Hispanic linkages between the two areas were neither uniform nor stable. Ejutla's relationship with the Valley of Oaxaca shifted from a nearly vacant frontier during the Early/Middle Formative to a more tightly interconnected periphery of the Monte Albán polity during the Early Classic (IIIA). By the Late Postclassic (V), the small polities of Ejutla may have been economically interdependent with increasing ties to coastal and other areas outside the Central Valleys of Oaxaca.

TABLE 11.1. Component* densities per 100 km$^2$, by phase, in Ejutla and the Valley of Oaxaca.

| Phase | Oaxaca | Ejutla |
|---|---|---|
| Monte Albán V | 72.6 | 62.5 |
| Monte Albán IV | 14.9 | 8.7 |
| Monte Albán IIIA | 43.8 | 22.3 |
| Monte Albán II | 20.2 | 8.3 |
| Late I | 29.9 | 11.4 |
| Early I | 11.9 | 4.0 |
| Rosario | 3.6 | 0.8 |
| Early Formative | 1.9 | 0.6 |

* Combined sites.

TABLE 11.2. Population densities per km$^2$, by phase, in Ejutla and the Valley of Oaxaca.

| Phase | Oaxaca | Ejutla |
|---|---|---|
| Monte Albán V | 78.4 | 38.8 |
| Monte Albán IV | 36.5 | 5.9 |
| Monte Albán IIIA | 57.3 | 28.4 |
| Monte Albán II | 19.7 | 4.2 |
| Late I | 24.1 | 6.7 |
| Early I | 6.9 | .5 |
| Rosario | .9 | <.1 |
| Early Formative | .9 | <.1 |

In many respects, especially size, the Ejutla Valley is more similar to individual subregions of the Valley of Oaxaca, which, like Ejutla, have less diversity than the Valley of Oaxaca overall. Ejutla shares more historical characteristics with some subregions than others, but these changed over time. The population history of Ejutla most closely mirrors that of the adjacent subregion, southern Valle Grande. This is not surprising given the proximity of the two areas. Yet at various points in the pre-Hispanic sequence, depending on where the demographic and political center was situated in the Valley of Oaxaca, demographic densities in Ejutla were more similar to those found in eastern Tlacolula and Etla. By the Postclassic—and despite earlier parallels—the demographic densities in eastern Tlacolula and Ejutla were at the two ends of the range.

During the Early Formative, when the largest center in the entire region was San José Mogote in the Etla arm of the valley, and then the Late/Terminal Formative (Monte Alban I/II), when Monte Albán was established as the capital in the center of the valley, population densities were lowest in Ejutla and eastern Tlacolula. Rather than environmental characteristics, what those two subregions shared at that time is that they were the two most spatially marginal subregions. During the Early Classic period, as Monte Albán consolidated its control over the valley, densities continued to be low in Ejutla and eastern Tlacolula in spite of the fact that the fourth-largest center in the combined region was located in Ejutla. That was the only phase when Ejutla had a center that was large by Valley of Oaxaca standards. During the Postclassic, when Tlacolula became the demographic and political core of the valley for at least a time, population and settlement histories in Ejutla and Tlacolula diverged. Ejutla was located far from the new demographic core of the valley and had population densities that were much lower than in Tlacolula. Instead, population densities were similar in Ejutla and Etla. Although Etla had been the heart of the Valley of Oaxaca prior to the establishment of Monte Albán, like Ejutla, it was peripheral to the new Postclassic core. Ejutla never achieved such a central demographic or political role despite agrarian resources that exceeded the potential of eastern Tlacolula and the role it played as a gateway to the Pacific Coast and to the lowlands.

By placing Ejutla in this broader geographical and temporal context and changing the scale of analysis between regions and

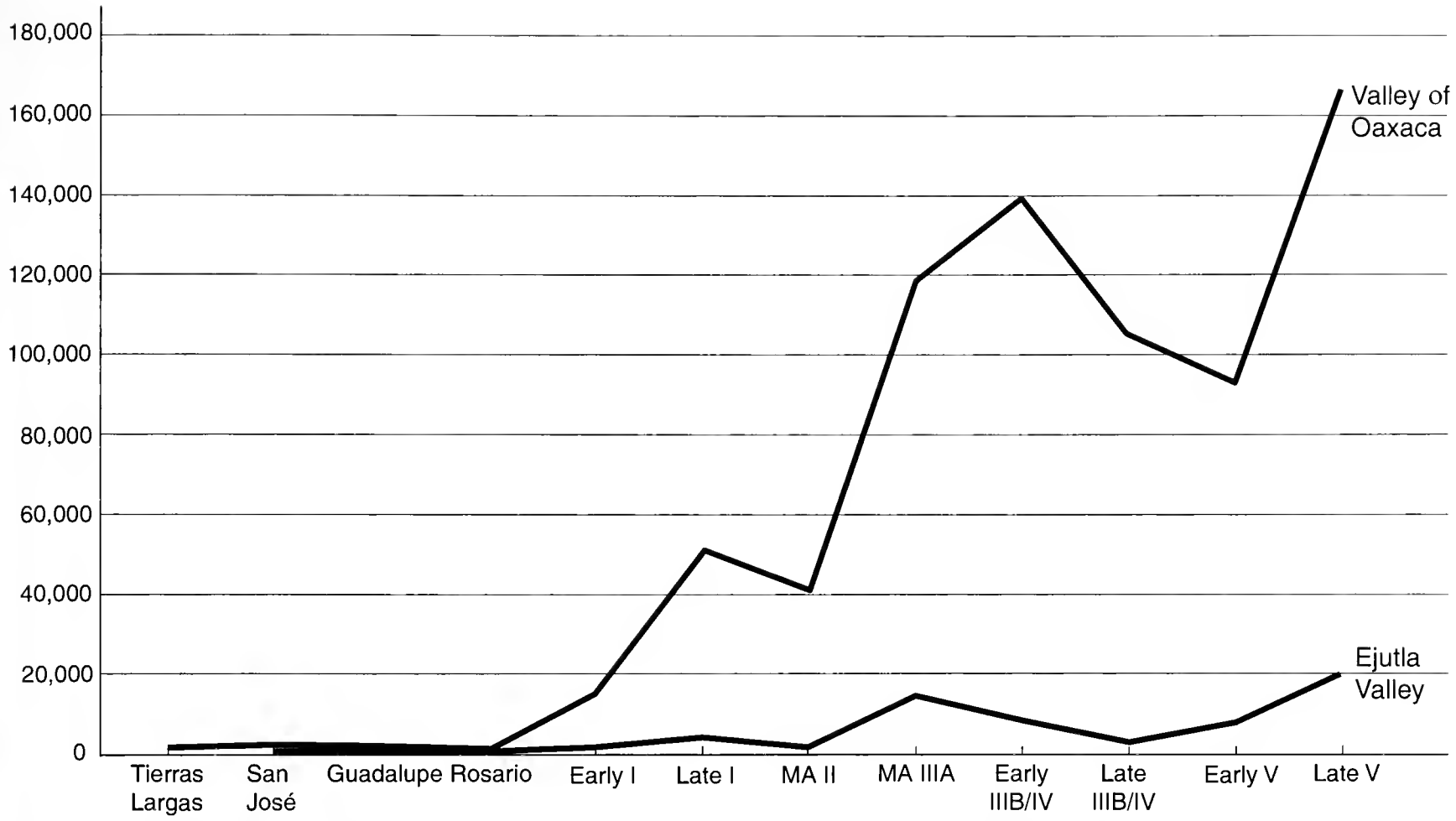



FIGURE 11.1. Population through time in Ejutla and the Valley of Oaxaca, based on recalculated regional populations for early IIIB/IV, late IIIB/IV, and early V.

subregions, we can start to comprehend the area's complex history much more fully than if we had focused on material and demographic factors alone. When we shift and compare scalar vantages, we can see that locational and historical factors as well as historically variable extraregional networks all were critical factors for understanding the region's settlement pattern shifts and political changes. There was nothing regular or preordained in how population growth/decline, demographic densities, or even relative nucleation varied over time. As with the rest of the valley system and beyond, population changes were complex and spatially variable. Simply put, to examine demographic trends for temporal eras lacking extensive documents and census data, there simply is no substitute for regional, full-coverage settlement pattern archaeology. In the next section, we synthesize how a macroregional vantage is an essential aspect of our interpretation of Ejutla's history and its changing relationship with the Valley of Oaxaca over time.

## Ejutla in Broad Temporal and Geographic Context

The first, small sedentary communities in the Ejutla Valley were established during the Early/Middle Formative (ca. 1500–500 BC). Across highland Mesoamerica, most communities were small at that time. Yet there was tremendous spatial variability, and some areas saw the establishment of larger settlements and the development of regional site hierarchies. The Mixteca Alta and the northern, Etla arm of the Valley of Oaxaca were two of the most densely populated areas, and site hierarchies emerged early there. The southern and eastern arms of the Valley of Oaxaca had much lower populations. Ejutla, at the opposite, southern edge of the Valley of Oaxaca, was a largely vacant frontier that was only slowly colonized from the north. Areas south of Ejutla were similarly vacant.

The Late Formative (Monte Albán I in the Central Valleys of Oaxaca) was a time of population increase, political growth,

TABLE 11.3. Population in the largest centers, by phase, in Oaxaca and Ejutla.

| Phase | Valley of Oaxaca population | Largest center in Oaxaca | Oaxaca population in sites >5,000 | Oaxaca population in sites >1,000 | Ejutla Valley population | Largest center in Ejutla | Ejutla population in sites >5,000 | Ejutla population in sites >1,000 |
|---|---|---|---|---|---|---|---|---|
| Monte Albán V | 166,467 | 13,831 | 58,490 | 106,545 | 19,970 | 2,970 | 0 | 7,888 |
| Monte Albán IV | 77,612 | 16,117 | 27,567 | 62,834 | 3,029 | 529 | 0 | 0 |
| Monte Albán IIIB | 78,930 | 24,189 | 29,541 | 59,898 | — | — | — | — |
| Monte Albán IIIA | 120,121 | 16,507 | 47,396 | 90,717 | 14,656 | 6,710 | 6,710 | 9,576 |
| Monte Albán II | 41,927 | 14,492 | 14,492 | 20,550 | 2,184 | 646 | 0 | 0 |
| Late I | 51,339 | 17,242 | 17,242 | 22,055 | 3,455 | 330 | 0 | 0 |
| Early I | 14,652 | 5,250 | 5,250 | 6,362 | 259 | 31 | 0 | 0 |
| Rosario | 1,835 | 564 | 0 | 0 | 40 | 16 | 0 | 0 |
| Guadalupe | 1,788 | 774 | 0 | 0 | — | — | — | — |
| San José | 1,942 | 1,384 | 0 | 0 | 24 | 0 | 0 | 0 |
| Tierras Largas | 327 | 128 | 0 | 0 | — | — | — | — |

state formation across the highlands, yet the population in Ejutla remained low and dispersed in very small villages and hamlets. Large centers were established in some regions; the largest in the Southern Highlands was Monte Albán in the hub of the Valley of Oaxaca. There was increased population nucleation around these early centers; areas distant from the early centers, like Ejutla, generally experienced lower population growth. In the Central Valleys of Oaxaca, population growth was greatest in the areas closest to the new capital and much lower at the valley's margins. Ejutla was clearly part of the Valley of Oaxaca interaction sphere in Monte Albán Early I but, like other valley margins, was not simply incorporated into or even intensively affected by the initial establishment of the new capital at Monte Albán, whose reach and influence may not have reached far beyond the central part of the valley.

There were more significant changes in Ejutla toward the end of Monte Albán I. The population grew 10-fold, and a hierarchy of settlements began to develop. A similar pattern of settlement and population increase occurred in the adjacent Sola Valley to the west of Ejutla. The demographic expansions in Ejutla and Sola coincide with a great increase in the size of Monte Albán, the numerous display of carved *danzantes* at that site, and the construction/elaboration of public buildings on the city's Main Plaza. The population and settlement changes in Ejutla and Sola were linked to the expanding exchange connections and population movements into these southern regions rather than persistent political interventions by the expanding Monte Albán polity. The interaction was not necessarily a product of direct political control and more likely occurred in a down-the-line or more indirect fashion. Ejutla continued as a partially integrated frontier area that was not independent of the Valley of Oaxaca but not yet a true periphery. We suspect that Monte Albán's relations with its hinterland were temporally fluid and much dependent on the friction of distance.

A general trend across highland Mesoamerica during the Terminal Formative (Monte Albán II in Oaxaca) was increasing primacy and demographic concentration, as the population in many regions was more heavily nucleated in one large settlement. These shifts were accompanied by settlement/population disruption, with some regions of highland Mesoamerica, including Ejutla, experiencing population stasis or decline and changing networks of interregional interaction and influence. Similar to the regional capitals of many expansive states, the Monte Albán polity embarked on an episode of imperialism, expanding its influence beyond the physiographic limits of the valley to areas like the Ejutla Valley, the Sola Valley, and the Cañada de Cuicatlán. This intervention in Ejutla disrupted earlier settlement patterns; many small, earlier centers decreased in size or were abandoned while three strategically positioned Late I centers grew in population and architectural elaboration. Instead of the down-the-line interaction and communication that likely occurred among the small settlements that had been part of the earlier frontier, connectivity between Ejutla and the Valley of Oaxaca increased and was largely channeled through the residents of major centers. The Ejutla site, under the modern district capital, grew to become the second-largest community in the southern part of the Central Valleys of Oaxaca and may have served as an important node for interaction with regions farther south. Monte Albán's leaders likely were interested in Ejutla as a gateway into the valley from mountain, coastal, and lowland areas; the widest array of paths to travel from Monte Albán to the Pacific Coast pass through Ejutla (White & Barber, 2012). The Ejutla Valley was no longer a frontier zone but became more politically and economically linked to the Monte Albán state.

The Early Classic (Monte Albán IIIA in Oaxaca) was a time of high population growth, increasing community size, and greater economic integration throughout highland Mesoamerica. The largest center ever, Teotihuacan, was established in central Mexico, and the repercussions of the new, dominant center were felt across Mesoamerica, including in Oaxaca and Ejutla. Monte Albán's leaders consolidated power and expanded their control/influence more strongly across the Valley of Oaxaca and nearby areas, including Ejutla, as their influence in more far-flung regions, especially to the north, diminished in response to Teotihuacan's expansionist activities. There was increasing political and economic integration in the Valley of Oaxaca. Monte Albán continued as the regional capital at the same time that a series of large secondary centers were established across the region. This network of centers ran unbroken from Monte Albán into Ejutla. One of the new centers in northern Ejutla, at San Joaquín, was among the largest centers in the entire Central Valleys of Oaxaca. By the Early Classic, Ejutla was more fully incorporated (both politically and economically) than ever before into the Monte Albán state. Incorporation into Monte Albán's political sphere likely was economically motivated, as Ejutla became an even more important conduit for coastal and lowland products, mostly light, high-valued goods, such as cotton and shell, as Monte Albán lost control of more distant peripheries such as the Cañada de Cuicatlán.

During the Late Classic/Early Postclassic (Monte Albán IIIB–IV in Oaxaca), there was sociopolitical disruption, population decline, and reorganization across highland Mesoamerica. Although we do not yet clearly understand why, large centers like Teotihuacan and Monte Albán declined or were largely abandoned, and new, smaller centers arose elsewhere to fill the power vacuum. In the Valley of Oaxaca, Monte Albán's decline coincided with the political reorganization of the region, including Ejutla, into smaller, semiautonomous polities, or petty states, that arose as local elites began to assert their independence. Specialized craft production and commercial exchanges took on added importance as local leaders used networks of personal economic connections to increase their power. As the new demographic center in the Valley of Oaxaca shifted to the Tlacolula arm, the southern and northern parts of the valley lost population. The greatest population decline occurred in the Ejutla region. Ejutla's full incorporation into the Monte Albán state during the Early Classic had increased its economic interdependence with the larger valley; as Monte Albán declined, Ejutla lost important economic linkages with Oaxaca. These losses were compounded by the shift of the valley's demographic focus to the eastern arm of the valley. Yet as in the rest of the valley, the small polities in Ejutla began to form their own economic connections both within and beyond the Central Valleys of Oaxaca. These independent connections to coastal and lowland areas to the south and Ejutla's prior role as a gateway into the Valley of Oaxaca were important factors in Ejutla's rebound during the Late Postclassic, even as the demographic center of the valley remained in Tlacolula.

Populations grew tremendously across highland Mesoamerica during the Late Postclassic (Monte Albán V in Oaxaca), and Ejutla was no exception. This was a period of increasing

commercialization, expanding networks, and shifting relations across Mesoamerica (Smith, 2002; Smith & Berdan, 2003). Regional topographic boundaries were more permeable than ever before as small economically interdependent political units proliferated across the landscape. The Aztec capital, giant Tenochtitlán, in the Basin of Mexico was a late exception. Highland Oaxaca was politically fragmented into a network of small semiautonomous petty states that stretched from the Mixteca Alta to the Valleys of Oaxaca and Ejutla and south to the Pacific Coast. Although Tlacolula continued to be the demographic center of the Valley of Oaxaca, power shifted between a series of more equally sized, competing centers.

Populations rebounded in Ejutla, and several large centers in central Ejutla were among the largest centers in the southern part of the Central Valleys of Oaxaca. These centers were the capitals of several small polities that appear to have retained most of the autonomy they had achieved following the decline of Monte Albán. Ejutla's greater political independence from central Oaxaca likely was related to its importance as a southern gateway into the Valley of Oaxaca. Although the petty states in Ejutla were small, distinct artifact assemblages, settlement patterns, and site layouts suggest that the leaders of each small polity had their own strategies of rule and their own networks of exchange that extended both into the Valley of Oaxaca and south to the coast. As occurred at the macroregional scale, economic networks spanned topographic impediments (Kowalewski et al., 1983a). The caciques of Ejutla were able to exploit these networks to build their own economic power bases to compete with neighboring polities in the larger valley to the north. The Postclassic demographic resurgence of Ejutla likely was a key factor in the area's prominent colonial period architectural presence, influencing the decision by the conquering Spanish invaders to establish many large haciendas in the region. Based on our findings and analyses, it seems clear that the archaeological examination of macroregions is a key to understanding and accounting for long-term changes in past societies. Without that broad scalar lens, we could not have placed Ejutla's local sequence of settlement change in appropriate context, nor could we have had a basis to conceptualize and understand the region's shifting relations with Oaxaca's first urban center, Monte Albán, and the larger valley where it was situated.

## Broader Implications and Concluding Thoughts

In their volume that focuses mainly on more contemporary times in Oaxaca, Murphy and Stepick (1991) emphasize cycles of relative control when the region's urban centers were more or less engaged with the outlying hinterlands. Based on settlement patterns, such as relative demographic nucleation, as well as the distribution of public architectural construction, we have illustrated that such variability or cycling extends back into the past. At the scale of the region, valley, and even macroregion, there was no regular, consistent, or uniform tempo leading inevitably toward increasing political complexity or demographic growth. Like most aspects of the human career, in pre-Hispanic highland Mexico and beyond, settlement pattern histories were complex, spatially variable, nonlinear, and contingent.

One of the ways in which human networks past and present are complex is that stylistic, economic, and political links and affiliations are not always coterminous. Nor do these networks always align with geographic regions or topographic features. We have illustrated these shifting affiliations and spatial relations through this diachronic investigation of the Ejutla Valley and the Valley of Oaxaca. Based on these empirical findings and interpretations, we propose that in framing the ways that we, as archaeologists and historians, study our species' complex past, a multiscalar approach that includes consideration of the macroscale is requisite. The roots of globalization extend back into deep history, and they are not planted in, nor did they see their genesis in, one continent.

Finally, we see instructive reminders for archaeologists in our findings. Not only is there so much to be learned from the careful recording of surface artifacts and features if we approach these findings systematically and collect information at large enough scales, but such data may inform our reading of the past in so many ways even when they are gathered in seeming hinterlands distant from monumental centers and rich archaeological finds. Equally to the point, the questions and implications from such findings often eclipse the issues and queries that were conceptualized when a project began. Over the years, systematic archaeological surveys have repeatedly served to raise and bring to the fore new findings and even questions as it has helped answer others, thereby typifying a productive research methodology (e.g., Gould, 1993).

In Oaxaca, Mexico, and beyond, there is so much systematic settlement pattern archaeology still to be undertaken, so many regions that we know little or nothing about. Given the tempo of modern development and for the sake of historical preservation and conservation as well as the almost universal urge for peoples to learn more about their own roots, it is imperative, in our opinion, that such investigations become an even higher disciplinary priority. The payoffs for scientific archaeology and historical preservation, along with the significant enhancements of our understandings of the deep pasts of peoples from around the world, are already evident.

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## Appendix I. Site Numbers, Part A: Field Number Designations.

Field-numbered sites consist of three sets of letters followed by a number (e.g., EJ-LC-LL-1). The first set refers to the district. Most of our sites were within the contemporary boundaries of the Ejutla district (EJ); however, a few at the northern edge are part of the Ocotlán district (OC). The second set of letters pertains to the town (*municipio*) that administers the land where the site is located. By far the largest territory in the Ejutla region belongs to the district capital, Ejutla de Crespo. The third set of letters refers to the smallest administrative unit (the *agencia*). For areas administered directly by a *municipio*, the letters for that town are repeated.

| Name | Municipio | Agencia |
|---|---|---|
| EJ-BSM-BSM | Barrio San Miguel | — |
| EJ-CA-CA | Coatecas Altas | — |
| EJ-EJ-BL | Ejutla de Crespo | Barranca Larga |
| EJ-EJ-CB | Ejutla de Crespo | Coatecas Bajas |
| EJ-EJ-CHI | Ejutla de Crespo | San Matías Chilazoa |
| EJ-EJ-EA | Ejutla de Crespo | El Arrogante |
| EJ-EJ-EC | Ejutla de Crespo | El Cerro |
| EJ-EJ-EJ | Ejutla de Crespo | — |
| EJ-EJ-ER | Ejutla de Crespo | La Ermita |
| EJ-EJ-EV | Ejutla de Crespo | El Vergel |
| EJ-EJ-HV | Ejutla de Crespo | Hacienda Vieja |
| EJ-EJ-LN | Ejutla de Crespo | La Noria |
| EJ-EJ-LO | Ejutla de Crespo | Los Ocotes |
| EJ-EJ-LOG | Ejutla de Crespo | San Juan Logolava |
| EJ-EJ-MT | Ejutla de Crespo | Monte del Toro |
| EJ-EJ-NO | Ejutla de Crespo | La Noria de Ortiz |
| EJ-EJ-SCN | Ejutla de Crespo | Santa Cruz Nexila |
| EJ-EJ-SJ | Ejutla de Crespo | San Joaquín |
| EJ-EJ-SMC | Ejutla de Crespo | Santa Marta Chichihualtepec |
| EJ-EJ-SO | Ejutla de Crespo | Zoritana |
| EJ-LC-AB | La Compañía | Agua Blanca |
| EJ-LC-AE | La Compañía | Agua del Espino |
| EJ-LC-CH | La Compañía | La Chopa |
| EJ-LC-LC | La Compañía | — |
| EJ-LC-LL | La Compañía | La Labor |
| EJ-LC-RE | La Compañía | Río de Ejutla |
| EJ-LP-LG | La Pe | La Guadalupe |
| EJ-LP-LP | La Pe | — |
| EJ-SAA-SAA | San Agustín Amatengo | — |
| EJ-SAZ-SAZ | San Andrés Zabache | — |
| EJ-SMC-SMC | San Martín de los Canseco | — |
| EJ-SML-SML | San Martín Lachilá | — |
| EJ-TAN-TAN | Taniche | — |
| EJ-YO-YO | Yogana | — |
| OC-OC-BV | Ocotlán | Buenavista |
| OC-SJP-SJP | San José Progreso | — |

## Appendix I. Site Numbers, Part B: Field Numbers and Site Numbers.

| Site no. | Field no. | Site no. | Field no. | Site no. | Field no. |
|---|---|---|---|---|---|
| 6-2/3-1 | EJ-EJ-SMC-7 | 6-6-44 | EJ-EJ-SCN-14 | 6-8-6 | OC-OC-BV-5 |
| 6-2/3-2 | EJ-EJ-SCN-18 | 6-6-45 | EJ-LC-AE-8 | 6-8-7 | EJ-EJ-CHI-5 |
| 6-2/3-3 | EJ-SAA-SAA-15 | 6-6-46 | EJ-TAN-TAN-9 | 6-8-8 | EJ-EJ-LOG-5 |
| 6-4-1 | EJ-EJ-SMC-7 | 6-6-47 | EJ-TAN-TAN-2 | 6-8-9 | EJ-EJ-SMC-6 |
| 6-4-2 | EJ-EJ-SMC-1 | 6-6-48 | EJ-SAA-SAA-11 | 6-8-10 | EJ-EJ-MT-11 |
| 6-4-3 | EJ-EJ-SCN-19 | 6-6-49 | EJ-SAA-SAA-10 | 6-8-11 | EJ-EJ-SMC-7 |
| 6-4-4 | EJ-EJ-SCN-18 | 6-6-50 | EJ-TAN-TAN-2 | 6-8-12 | EJ-EJ-SMC-9 |
| 6-5-1 | EJ-EJ-CHI-1 | 6-6-51 | EJ-TAN-TAN-2 | 6-8-13 | EJ-EJ-EV-13 |
| 6-5-2 | EJ-EJ-SMC-7 | 6-6-52 | EJ-TAN-TAN-2 | 6-8-14 | EJ-EJ-EV-2 |
| 6-5-3 | EJ-LP-LP-2 | 6-6-53 | EJ-EJ-EJ-42 | 6-8-15 | EJ-EJ-EV-22 |
| 6-5-4 | EJ-EJ-SMC-1 | 6-6-54 | EJ-EJ-SO-4 | 6-8-16 | EJ-EJ-EV-15 |
| 6-5-5 | EJ-EJ-SMC-1 | 6-6-55 | EJ-EJ-SO-5 | 6-8-17 | EJ-EJ-EV-15 |
| 6-5-6 | EJ-EJ-EV-28 | 6-6-56 | EJ-EJ-SO-5 | 6-8-18 | EJ-EJ-EV-15 |
| 6-5-7 | EJ-EJ-SJ-6 | 6-6-57 | EJ-EJ-ER-1 | 6-8-19 | EJ-LP-LG-3 |
| 6-5-8 | EJ-EJ-SJ-10 | 6-6-58 | EJ-SAA-SAA-15 | 6-8-20 | EJ-LP-LG-5 |
| 6-5-9 | EJ-BSM-BSM-20 | 6-6-59 | EJ-SAA-SAA-17 | 6-8-21 | EJ-LP-LG-6 |
| 6-5-10 | EJ-EJ-EJ-1 | 6-6-60 | EJ-EJ-LN-2 | 6-8-22 | EJ-EJ-SMC-18 |
| 6-5-11 | EJ-EJ-EJ-1 | 6-6-61 | EJ-YO-YO-12 | 6-8-23 | EJ-EJ-SMC-4 |
| 6-5-12 | EJ-EJ-SCN-19 | 6-6-62 | EJ-YO-YO-11 | 6-8-24 | EJ-LP-LG-1 |
| 6-5-13 | EJ-EJ-SCN-18 | 6-6-63 | EJ-LC-LL-1 | 6-8-25 | EJ-EJ-SMC-1 |
| 6-5-14 | EJ-LC-AE-8 | 6-7-1 | EJ-EJ-SMC-6 | 6-8-26 | EJ-EJ-EV-29 |
| 6-5-15 | EJ-TAN-TAN-2 | 6-7-2 | EJ-EJ-SMC-7 | 6-8-27 | EJ-EJ-EV-28 |
| 6-5-16 | EJ-LC-LL-1 | 6-7-3 | EJ-EJ-EV-2 | 6-8-28 | EJ-LP-LG-4 |
| 6-5-17 | EJ-TAN-TAN-2 | 6-7-4 | EJ-EJ-EV-14 | 6-8-29 | EJ-LP-LG-7 |
| 6-5-18 | EJ-EJ-SO-4 | 6-7-5 | EJ-LP-LG-3 | 6-8-30 | EJ-LP-LG-2 |
| 6-5-19 | EJ-EJ-EJ-42 | 6-7-6 | EJ-EJ-SMC-1 | 6-8-31 | EJ-EJ-SJ-2 |
| 6-5-20 | EJ-SAA-SAA-15 | 6-7-7 | EJ-EJ-SJ-6 | 6-8-32 | EJ-LP-LG-1 |
| 6-5-21 | EJ-YO-YO-12 | 6-7-8 | EJ-EJ-SJ-7 | 6-8-33 | EJ-EJ-SJ-6 |
| 6-6-1 | OC-OC-BV-4 | 6-7-9 | EJ-LP-LG-1 | 6-8-34 | OC-SJP-SJP-108 |
| 6-6-2 | EJ-EJ-CHI-1 | 6-7-10 | OC-SJP-SJP-121 | 6-8-35 | OC-SJP-SJP-109 |
| 6-6-3 | EJ-EJ-LOG-2 | 6-7-11 | EJ-LC-AE-1 | 6-8-36 | OC-SJP-SJP-110 |
| 6-6-4 | EJ-EJ-SMC-7 | 6-7-12 | EJ-EJ-SJ-10 | 6-8-37 | OC-SJP-SJP-129 |
| 6-6-5 | EJ-EJ-EV-2 & 13 | 6-7-13 | EJ-TAN-TAN-1 | 6-8-38 | EJ-SMC-SMC-4 |
| 6-6-6 | EJ-EJ-EV-14 | 6-7-14 | EJ-EJ-EJ-1 | 6-8-39 | EJ-SMC-SMC-5 |
| 6-6-7 | EJ-LP-LP-5 | 6-7-15 | EJ-EJ-EJ-1 | 6-8-40 | EJ-EJ-LO-10 |
| 6-6-8 | EJ-LP-LG-3 | 6-7-16 | EJ-EJ-EJ-1 | 6-8-41 | EJ-EJ-LO-7 |
| 6-6-9 | EJ-LP-LP-2 | 6-7-17 | EJ-EJ-EJ-15 | 6-8-42 | EJ-EJ-LO-7 |
| 6-6-10 | EJ-EJ-SMC-14 | 6-7-18 | EJ-EJ-SCN-18 | 6-8-43 | EJ-EJ-LO-8 |
| 6-6-11 | EJ-EJ-SMC-4 | 6-7-19 | EJ-EJ-SCN-11 | 6-8-44 | EJ-EJ-LO-4 |
| 6-6-12 | EJ-EJ-SMC-1 | 6-7-20 | EJ-EJ-SCN-17 | 6-8-45 | EJ-EJ-LO-12 |
| 6-6-13 | EJ-EJ-SMC-3 | 6-7-21 | EJ-LC-LC-13 | 6-8-46 | EJ-EJ-LO-11 |
| 6-6-14 | EJ-EJ-SMC-2 | 6-7-22 | EJ-TAN-TAN-8 | 6-8-47 | EJ-LC-AE-4 |
| 6-6-15 | EJ-EJ-EV-15 | 6-7-23 | EJ-TAN-TAN-2 | 6-8-48 | EJ-EJ-SJ-12 |
| 6-6-16 | EJ-EJ-EV-15 | 6-7-24 | EJ-LC-LC-7 | 6-8-49 | EJ-EJ-SJ-13 |
| 6-6-17 | EJ-EJ-EV-27 | 6-7-25 | EJ-LC-LC-17 | 6-8-50 | EJ-EJ-SJ-9 |
| 6-6-18 | EJ-EJ-SJ-6 | 6-7-26 | EJ-LC-LL-1 | 6-8-51 | EJ-EJ-SJ-20 |
| 6-6-19 | EJ-EJ-SJ-6 | 6-7-27 | EJ-SAA-SAA-13 | 6-8-52 | EJ-EJ-EJ-9 |
| 6-6-20 | EJ-LP-LG-1 | 6-7-28 | EJ-LC-CH-1 | 6-8-53 | EJ-EJ-EJ-2 |
| 6-6-21 | EJ-LP-LG-4 | 6-7-29 | EJ-SAA-SAA-12 | 6-8-54 | EJ-EJ-LO-11 |
| 6-6-22 | EJ-EJ-SJ-6 | 6-7-30 | EJ-SAA-SAA-14 | 6-8-55 | EJ-EJ-EC-1 |
| 6-6-23 | OC-SJP-SJP-123 | 6-7-31 | EJ-SAA-SAA-10 | 6-8-56 | EJ-EJ-EJ-31 |
| 6-6-24 | OC-SJP-SJP-121 | 6-7-32 | EJ-TAN-TAN-2 | 6-8-57 | EJ-TAN-TAN-2 |
| 6-6-25 | OC-SJP-SJP-125 | 6-7-33 | EJ-TAN-TAN-2 | 6-8-58 | EJ-TAN-TAN-3 |
| 6-6-26 | EJ-EJ-LO-10 | 6-7-34 | EJ-LC-RE-3 | 6-8-59 | EJ-TAN-TAN-3 |
| 6-6-27 | EJ-EJ-LO-9 | 6-7-35 | EJ-EJ-EJ-42 | 6-8-60 | EJ-EJ-EJ-17 |
| 6-6-28 | EJ-EJ-LO-5 | 6-7-36 | EJ-EJ-EJ-42 | 6-8-61 | EJ-EJ-EJ-16 |
| 6-6-29 | EJ-LC-AE-1 | 6-7-37 | EJ-CA-CA-12 | 6-8-62 | EJ-BSM-BSM-25 |
| 6-6-30 | EJ-EJ-SJ-10 | 6-7-38 | EJ-SAA-SAA-6 | 6-8-63 | EJ-TAN-TAN-5 |
| 6-6-31 | EJ-EJ-SJ-13 | 6-7-39 | EJ-SAA-SAA-15 | 6-8-64 | EJ-BSM-BSM-24 |
| 6-6-32 | EJ-BSM-BSM-21 | 6-7-40 | EJ-SAA-SAA-1 | 6-8-65 | EJ-TAN-TAN-1 |
| 6-6-33 | EJ-BSM-BSM-20 | 6-7-41 | EJ-SAA-SAA-16 | 6-8-66 | EJ-TAN-TAN-1 |
| 6-6-34 | EJ-TAN-TAN-1 | 6-7-42 | EJ-YO-YO-7 | 6-8-67 | EJ-EJ-EJ-1 |
| 6-6-35 | EJ-EJ-EJ-1 | 6-7-43 | EJ-YO-YO-5 | 6-8-68 | EJ-EJ-EJ-1 |
| 6-6-36 | EJ-EJ-EJ-1 | 6-7-44 | EJ-YO-YO-12 | 6-8-69 | EJ-EJ-EJ-1 |
| 6-6-37 | EJ-EJ-EJ-1 | 6-7-45 | EJ-YO-YO-15 | 6-8-70 | EJ-EJ-EJ-1 |
| 6-6-38 | EJ-EJ-SCN-16 | 6-7-46 | EJ-YO-YO-14 | 6-8-71 | EJ-EJ-EJ-7 |
| 6-6-39 | EJ-SAZ-SAZ-9 | 6-8-1 | OC-OC-BV-13 | 6-8-72 | EJ-EJ-EJ-1 |
| 6-6-40 | EJ-EJ-SCN-19 | 6-8-2 | OC-OC-BV-11 | 6-8-73 | EJ-EJ-EJ-1 |
| 6-6-41 | EJ-EJ-SCN-18 | 6-8-3 | OC-OC-BV-1 | 6-8-74 | EJ-EJ-EJ-1 |
| 6-6-42 | EJ-EJ-SCN-20 | 6-8-4 | OC-OC-BV-3 | 6-8-75 | EJ-EJ-EJ-1 |
| 6-6-43 | EJ-EJ-SCN-10 | 6-8-5 | OC-OC-BV-6 | 6-8-76 | EJ-EJ-EJ-15 |

Appendix I. *Continued.*

| Site no. | Field no. | Site no. | Field no. | Site no. | Field no. |
|---|---|---|---|---|---|
| 6-8-77 | EJ-EJ-EJ-6 | 6-10-14 | EJ-TAN-TAN-1 | 6-11-34 | EJ-EJ-CHI-11 |
| 6-8-78 | EJ-EJ-EJ-3 | 6-10-15 | EJ-EJ-EJ-1 | 6-11-35 | EJ-EJ-NO-9 |
| 6-8-79 | EJ-EJ-EJ-12 | 6-10-16 | EJ-EJ-EC-4 | 6-11-36 | EJ-EJ-NO-7 |
| 6-8-80 | EJ-EJ-EJ-37 | 6-10-17 | EJ-EJ-EC-5 | 6-11-37 | EJ-EJ-NO-8 |
| 6-8-81 | EJ-EJ-EJ-26 | 6-10-18 | EJ-EJ-EC-3 | 6-11-38 | EJ-EJ-LOG-3 |
| 6-8-82 | EJ-EJ-EJ-23 | 6-10-19 | EJ-EJ-EC-2 | 6-11-39 | EJ-EJ-LOG-4 |
| 6-8-83 | EJ-EJ-EJ-19 | 6-10-20 | EJ-CA-CA-1 | 6-11-40 | EJ-EJ-LOG-1 |
| 6-8-84 | EJ-EJ-EJ-20 | 6-10-21 | EJ-CA-CA-1 | 6-11-41 | EJ-LP-LP-1 |
| 6-8-85 | EJ-EJ-EJ-21 | 6-10-22 | EJ-CA-CA-1 | 6-11-42 | EJ-EJ-SMC-11 |
| 6-8-86 | EJ-EJ-HV-1 | 6-10-23 | EJ-CA-CA-1 | 6-11-43 | EJ-EJ-SMC-12 |
| 6-8-87 | EJ-EJ-EJ-32 | 6-10-24 | EJ-CA-CA-1 | 6-11-44 | EJ-EJ-SMC-6 |
| 6-8-88 | EJ-EJ-EJ-28 | 6-10-25 | EJ-CA-CA-1 | 6-11-45 | EJ-EJ-MT-13 |
| 6-8-89 | EJ-EJ-EJ-29 | 6-10-26 | EJ-CA-CA-1 | 6-11-46 | EJ-EJ-MT-9 |
| 6-8-90 | EJ-EJ-EJ-33 | 6-10-27 | EJ-CA-CA-1 | 6-11-47 | EJ-EJ-MT-8 |
| 6-8-91 | EJ-CA-CA-1 | 6-10-28 | EJ-CA-CA-1 | 6-11-48 | EJ-EJ-MT-7 |
| 6-8-92 | EJ-EJ-LO-2 | 6-10-29 | EJ-EJ-SJ-1 | 6-11-49 | EJ-EJ-MT-10 |
| 6-8-93 | EJ-EJ-EJ-1 | 6-10-30 | EJ-EJ-SCN-8 | 6-11-50 | EJ-EJ-MT-11 |
| 6-8-94 | EJ-EJ-EJ-1 | 6-10-31 | EJ-SML-SML-20 | 6-11-51 | EJ-EJ-MT-15 |
| 6-8-95 | EJ-EJ-SCN-1 | 6-10-32 | EJ-SML-SML-3 | 6-11-52 | EJ-EJ-MT-5 |
| 6-8-96 | EJ-SML-SML-11 | 6-10-33 | EJ-SML-SML-8 | 6-11-53 | EJ-EJ-MT-4 |
| 6-8-97 | EJ-SAZ-SAZ-3 | 6-10-34 | EJ-SML-SML-2 | 6-11-54 | EJ-EJ-MT-20 |
| 6-8-98 | EJ-SAZ-SAZ-4 | 6-10-35 | EJ-SML-SML-4 | 6-11-55 | EJ-EJ-EV-24 |
| 6-8-99 | EJ-SAZ-SAZ-2 | 6-10-36 | EJ-SAZ-SAZ-6 | 6-11-56 | EJ-EJ-MT-6 |
| 6-8-100 | EJ-SML-SML-7 | 6-10-37 | EJ-SML-SML-10 | 6-11-57 | EJ-EJ-MT-1 |
| 6-8-101 | EJ-SML-SML-13 | 6-10-38 | EJ-SML-SML-5 | 6-11-58 | EJ-EJ-SMC-8 |
| 6-8-102 | EJ-SML-SML-12 | 6-10-39 | EJ-SML-SML-12 | 6-11-59 | EJ-EJ-SMC-7 |
| 6-8-103 | EJ-SML-SML-12 | 6-10-40 | EJ-SML-SML-14 | 6-11-60 | EJ-EJ-SMC-9 |
| 6-8-104 | EJ-SML-SML-1 | 6-10-41 | EJ-SML-SML-15 | 6-11-61 | EJ-EJ-SMC-10 |
| 6-8-105 | EJ-SML-SML-19 | 6-10-42 | EJ-EJ-SCN-18 | 6-11-62 | EJ-EJ-EV-25 |
| 6-8-106 | EJ-SML-SML-18 | 6-10-43 | EJ-SML-SML-22 | 6-11-63 | EJ-EJ-EV-23 |
| 6-8-107 | EJ-SAZ-SAZ-9 | 6-10-44 | EJ-SML-SML-24 | 6-11-64 | EJ-EJ-EV-19 |
| 6-8-108 | EJ-EJ-SCN-19 | 6-10-45 | EJ-SML-SML-16 | 6-11-65 | EJ-EJ-EV-18 |
| 6-8-109 | EJ-SML-SML-16 | 6-10-46 | EJ-LC-RE-1 | 6-11-66 | EJ-EJ-EV-22 |
| 6-8-110 | EJ-LC-AE-5 | 6-10-47 | EJ-LC-LC-8 | 6-11-67 | EJ-EJ-EV-21 |
| 6-8-111 | EJ-LC-AE-6 | 6-10-48 | EJ-EJ-EJ-42 | 6-11-68 | EJ-EJ-EV-20 |
| 6-8-112 | EJ-LC-AB-1 | 6-10-49 | EJ-EJ-SO-6 | 6-11-69 | EJ-EJ-EV-13 |
| 6-8-113 | EJ-TAN-TAN-6 | 6-10-50 | EJ-EJ-CB-1 | 6-11-70 | EJ-EJ-EV-12 |
| 6-8-114 | EJ-LC-LL-1 | 6-10-51 | EJ-SAA-SAA-15 | 6-11-71 | EJ-EJ-EV-11 |
| 6-8-115 | EJ-LC-LL-2 | 6-10-52 | EJ-YO-YO-12 | 6-11-72 | EJ-EJ-EV-10 |
| 6-8-116 | EJ-TAN-TAN-2 | 6-11-1 | OC-OC-BV-13 | 6-11-73 | EJ-EJ-EV-4 |
| 6-8-117 | EJ-TAN-TAN-2 | 6-11-2 | OC-OC-BV-20 | 6-11-74 | EJ-EJ-EV-3 |
| 6-8-118 | EJ-TAN-TAN-2 | 6-11-3 | OC-OC-BV-12 | 6-11-75 | EJ-EJ-EV-5 |
| 6-8-119 | EJ-LC-RE-3 | 6-11-4 | OC-OC-BV-1 | 6-11-76 | EJ-EJ-EV-1 |
| 6-8-120 | EJ-EJ-HV-2 | 6-11-5 | OC-OC-BV-3 | 6-11-77 | EJ-EJ-EV-6 |
| 6-8-121 | EJ-EJ-EJ-39 | 6-11-6 | OC-OC-BV-2 | 6-11-78 | EJ-EJ-EV-7 |
| 6-8-122 | EJ-EJ-EJ-41 | 6-11-7 | OC-OC-BV-6 | 6-11-79 | EJ-EJ-EV-8 |
| 6-8-123 | EJ-EJ-EJ-42 | 6-11-8 | OC-OC-BV-5 | 6-11-80 | EJ-EJ-EV-9 |
| 6-8-124 | EJ-EJ-EJ-42 | 6-11-9 | OC-OC-BV-4 | 6-11-81 | EJ-EJ-EV-32 |
| 6-8-125 | EJ-EJ-SO-2 | 6-11-10 | OC-OC-BV-15 | 6-11-82 | EJ-EJ-EV-17 |
| 6-8-126 | EJ-CA-CA-12 | 6-11-11 | OC-OC-BV-14 | 6-11-83 | EJ-EJ-EV-15 |
| 6-8-127 | EJ-CA-CA-8 | 6-11-12 | OC-OC-BV-16 | 6-11-84 | EJ-EJ-EV-16 |
| 6-8-128 | EJ-SAA-SAA-9 | 6-11-13 | OC-OC-BV-18 | 6-11-85 | EJ-LP-LP-4 |
| 6-8-129 | EJ-SAA-SAA-6 | 6-11-14 | OC-OC-BV-17 | 6-11-86 | EJ-LP-LP-3 |
| 6-8-130 | EJ-SAA-SAA-15 | 6-11-15 | OC-OC-BV-19 | 6-11-87 | EJ-LP-LP-5 |
| 6-8-131 | EJ-YO-YO-5 | 6-11-16 | EJ-EJ-CHI-5 | 6-11-88 | EJ-LP-LG-6 |
| 6-8-132 | EJ-YO-YO-12 | 6-11-17 | EJ-EJ-CHI-6 | 6-11-89 | EJ-LP-LG-3 |
| 6-8-133 | EJ-YO-YO-17 | 6-11-18 | EJ-EJ-CHI-3 | 6-11-90 | EJ-LP-LP-2 |
| 6-8-134 | EJ-CA-CA-18 | 6-11-19 | EJ-EJ-CHI-4 | 6-11-91 | EJ-EJ-SMC-20 |
| 6-8-135 | EJ-CA-CA-13 | 6-11-20 | EJ-EJ-CHI-2 | 6-11-92 | EJ-EJ-SMC-13 |
| 6-10-1 | EJ-EJ-EV-13 | 6-11-21 | EJ-EJ-CHI-1 | 6-11-93 | EJ-EJ-SMC-15 |
| 6-10-2 | EJ-EJ-EV-2 | 6-11-22 | EJ-EJ-NO-1 | 6-11-94 | EJ-EJ-SMC-16 |
| 6-10-3 | EJ-EJ-EV-2 | 6-11-23 | EJ-EJ-NO-2 | 6-11-95 | EJ-EJ-SMC-4 |
| 6-10-4 | EJ-LP-LP-6 | 6-11-24 | EJ-EJ-NO-3 | 6-11-96 | EJ-EJ-SMC-17 |
| 6-10-5 | EJ-LP-LP-5 | 6-11-25 | EJ-EJ-NO-4 | 6-11-97 | EJ-EJ-SMC-19 |
| 6-10-6 | EJ-EJ-SJ-6 | 6-11-26 | EJ-EJ-NO-5 | 6-11-98 | EJ-EJ-SMC-3 |
| 6-10-7 | EJ-EJ-SJ-6 | 6-11-27 | EJ-EJ-NO-6 | 6-11-99 | EJ-EJ-SMC-5 |
| 6-10-8 | EJ-LP-LG-1 | 6-11-28 | EJ-EJ-MT-16 | 6-11-100 | EJ-EJ-SMC-1 |
| 6-10-9 | EJ-EJ-SJ-2 | 6-11-29 | EJ-EJ-MT-17 | 6-11-101 | EJ-EJ-SMC-1 |
| 6-10-10 | EJ-TAN-TAN-2 | 6-11-30 | EJ-EJ-CHI-7 | 6-11-102 | EJ-EJ-EV-28 |
| 6-10-11 | EJ-TAN-TAN-3 | 6-11-31 | EJ-EJ-CHI-8 | 6-11-103 | EJ-EJ-EV-26 |
| 6-10-12 | EJ-TAN-TAN-3 | 6-11-32 | EJ-EJ-CHI-9 | 6-11-104 | EJ-EJ-EV-29 |
| 6-10-13 | EJ-TAN-TAN-1 | 6-11-33 | EJ-EJ-CHI-10 | 6-11-105 | EJ-EJ-EV-30 |

## Appendix I. *Continued.*

| Site no. | Field no. | Site no. | Field no. | Site no. | Field no. |
|---|---|---|---|---|---|
| 6-11-106 | EJ-EJ-EV-31 | 6-11-178 | EJ-TAN-TAN-3 | 6-11-250 | EJ-EJ-SCN-10 |
| 6-11-107 | EJ-EJ-EV-27 | 6-11-179 | EJ-BSM-BSM-25 | 6-11-251 | EJ-EJ-SCN-12 |
| 6-11-108 | EJ-LP-LG-4 | 6-11-180 | EJ-BSM-BSM-20 | 6-11-252 | EJ-EJ-SCN-17 |
| 6-11-109 | EJ-LP-LG-1 | 6-11-181 | EJ-BSM-BSM-24 | 6-11-253 | EJ-SML-SML-24 |
| 6-11-110 | EJ-LP-LG-1 | 6-11-182 | EJ-BSM-BSM-23 | 6-11-254 | EJ-SML-SML-23 |
| 6-11-111 | EJ-LP-LG-1 | 6-11-183 | EJ-TAN-TAN-4 | 6-11-255 | EJ-SML-SML-21 |
| 6-11-112 | EJ-LP-LG-1 | 6-11-184 | EJ-TAN-TAN-5 | 6-11-256 | EJ-SML-SML-17 |
| 6-11-113 | EJ-LP-LG-1 | 6-11-185 | EJ-TAN-TAN-1 | 6-11-257 | EJ-SML-SML-16 |
| 6-11-114 | EJ-LP-LG-1 | 6-11-186 | EJ-TAN-TAN-1 | 6-11-258 | EJ-SAZ-SAZ-10 |
| 6-11-115 | EJ-EJ-SJ-2 | 6-11-187 | EJ-TAN-TAN-1 | 6-11-259 | EJ-LC-AE-6 |
| 6-11-116 | EJ-EJ-SJ-2 | 6-11-188 | EJ-TAN-TAN-1 | 6-11-260 | EJ-LC-AE-7 |
| 6-11-117 | EJ-EJ-SJ-5 | 6-11-189 | EJ-EJ-EJ--1 | 6-11-261 | EJ-LC-LC-15 |
| 6-11-118 | EJ-EJ-SJ-3 | 6-11-190 | EJ-EJ-EJ-1 | 6-11-262 | EJ-LC-LC-14 |
| 6-11-119 | EJ-EJ-SJ-4 | 6-11-191 | EJ-EJ-EJ-1 | 6-11-263 | EJ-LC-LC-12 |
| 6-11-120 | EJ-EJ-LO-1 | 6-11-192 | EJ-EJ-EJ-1 | 6-11-264 | EJ-LC-LC-11 |
| 6-11-121 | EJ-EJ-SJ-6 | 6-11-193 | EJ-EJ-EJ-1 | 6-11-265 | EJ-LC-LC-13 |
| 6-11-122 | EJ-EJ-MT-19 | 6-11-194 | EJ-EJ-EJ-15 | 6-11-266 | EJ-LC-LC-6 |
| 6-11-123 | OC-SJP-SJP-106 | 6-11-195 | EJ-EJ-EJ-13 | 6-11-267 | EJ-LC-AB-1 |
| 6-11-124 | EJ-EJ-MT-18 | 6-11-196 | EJ-EJ-EJ-14 | 6-11-268 | EJ-LC-AB-3 |
| 6-11-125 | OC-SJP-SJP-105 | 6-11-197 | EJ-EJ-EJ-38 | 6-11-269 | EJ-LC-AB-4 |
| 6-11-126 | OC-SJP-SJP-107 | 6-11-198 | EJ-EJ-EJ-3 | 6-11-270 | EJ-LC-RE-2 |
| 6-11-127 | OC-SJP-SJP-104 | 6-11-199 | EJ-EJ-EJ-22 | 6-11-271 | EJ-LC-AB-2 |
| 6-11-128 | OC-SJP-SJP-101 | 6-11-200 | EJ-EJ-EJ-20 | 6-11-272 | EJ-TAN-TAN-7 |
| 6-11-129 | OC-SJP-SJP-100 | 6-11-201 | EJ-EJ-EJ-21 | 6-11-273 | EJ-TAN-TAN-8 |
| 6-11-130 | OC-SJP-SJP-102 | 6-11-202 | EJ-EJ-EJ-25 | 6-11-274 | EJ-TAN-TAN-10 |
| 6-11-131 | OC-SJP-SJP-103 | 6-11-203 | EJ-EJ-EJ-24 | 6-11-275 | EJ-LC-LC-9 |
| 6-11-132 | OC-SJP-SJP-108 | 6-11-204 | EJ-EJ-EC-10 | 6-11-276 | EJ-LC-LC-10 |
| 6-11-133 | EJ-SMC-SMC-1 | 6-11-205 | EJ-EJ-EC-4 | 6-11-277 | EJ-LC-LC-16 |
| 6-11-134 | EJ-SMC-SMC-6 | 6-11-206 | EJ-EJ-EC-5 | 6-11-278 | EJ-LC-LC-3 |
| 6-11-135 | EJ-SMC-SMC-2 | 6-11-207 | EJ-EJ-EC-7 | 6-11-279 | EJ-LC-LC-18 |
| 6-11-136 | EJ-SMC-SMC-7 | 6-11-208 | EJ-EJ-EC-9 | 6-11-280 | EJ-LC-LC-19 |
| 6-11-137 | OC-SJP-SJP-122 | 6-11-209 | EJ-EJ-EC-8 | 6-11-281 | EJ-LC-RE-4 |
| 6-11-138 | OC-SJP-SJP-124 | 6-11-210 | EJ-EJ-EC-6 | 6-11-282 | EJ-LC-RE-6 |
| 6-11-139 | OC-SJP-SJP-121 | 6-11-211 | EJ-EJ-EC-3 | 6-11-283 | EJ-LC-RE-5 |
| 6-11-140 | OC-SJP-SJP-125 | 6-11-212 | EJ-EJ-EC-2 | 6-11-284 | EJ-LC-LC-2 |
| 6-11-141 | OC-SJP-SJP-126 | 6-11-213 | EJ-EJ-EJ-29 | 6-11-285 | EJ-LC-LC-4 |
| 6-11-142 | OC-SJP-SJP-112 | 6-11-214 | EJ-EJ-EJ-33 | 6-11-286 | EJ-LC-LC-1 |
| 6-11-143 | OC-SJP-SJP-128 | 6-11-215 | EJ-EJ-EJ-34 | 6-11-287 | EJ-LC-LC-5 |
| 6-11-144 | OC-SJP-SJP-127 | 6-11-216 | EJ-EJ-EJ-36 | 6-11-288 | EJ-LC-LL-1 |
| 6-11-145 | OC-SJP-SJP-113 | 6-11-217 | EJ-EJ-EJ-35 | 6-11-289 | EJ-LC-LL-3 |
| 6-11-146 | EJ-SMC-SMC-3 | 6-11-218 | EJ-CA-CA-1 | 6-11-290 | EJ-LC-LL-4 |
| 6-11-147 | EJ-SMC-SMC-4 | 6-11-219 | EJ-CA-CA-2 | 6-11-291 | EJ-LC-LL-2 |
| 6-11-148 | EJ-SMC-SMC-5 | 6-11-220 | EJ-EJ-EJ-1 | 6-11-292 | EJ-SAA-SAA-13 |
| 6-11-149 | EJ-EJ-LO-2 | 6-11-221 | EJ-EJ-EJ-1 | 6-11-293 | EJ-LC-CH-1 |
| 6-11-150 | EJ-EJ-LO-10 | 6-11-222 | EJ-EJ-SCN-9 | 6-11-294 | EJ-SAA-SAA-14 |
| 6-11-151 | EJ-EJ-LO-7 | 6-11-223 | EJ-EJ-SCN-15 | 6-11-295 | EJ-SAA-SAA-10 |
| 6-11-152 | EJ-EJ-LO-8 | 6-11-224 | EJ-EJ-SCN-16 | 6-11-296 | EJ-LC-RE-7 |
| 6-11-153 | EJ-EJ-LO-6 | 6-11-225 | EJ-EJ-SCN-2 | 6-11-297 | EJ-LC-RE-8 |
| 6-11-154 | EJ-EJ-LO-3 | 6-11-226 | EJ-EJ-SCN-5 | 6-11-298 | EJ-EJ-HV-3 |
| 6-11-155 | EJ-EJ-LO-12 | 6-11-227 | EJ-EJ-SCN-3 | 6-11-299 | EJ-EJ-HV-2 |
| 6-11-156 | EJ-EJ-LO-11 | 6-11-228 | EJ-EJ-SCN-4 | 6-11-300 | EJ-EJ-HV-2 |
| 6-11-157 | EJ-LC-AE-4 | 6-11-229 | EJ-EJ-SCN-1 | 6-11-301 | EJ-EJ-SO-3 |
| 6-11-158 | EJ-LC-AE-3 | 6-11-230 | EJ-SML-SML-9 | 6-11-302 | EJ-EJ-EJ-39 |
| 6-11-159 | EJ-LC-AE-1 | 6-11-231 | EJ-SAZ-SAZ-7 | 6-11-303 | EJ-EJ-EJ-43 |
| 6-11-160 | EJ-LC-AE-1 | 6-11-232 | EJ-SAZ-SAZ-8 | 6-11-304 | EJ-EJ-EJ-42 |
| 6-11-161 | EJ-LC-AE-1 | 6-11-233 | EJ-SML-SML-2 | 6-11-305 | EJ-EJ-SO-1 |
| 6-11-162 | EJ-LC-AE-2 | 6-11-234 | EJ-SAZ-SAZ-5 | 6-11-306 | EJ-EJ-CB-2 |
| 6-11-163 | EJ-EJ-SJ-11 | 6-11-235 | EJ-SAZ-SAZ-4 | 6-11-307 | EJ-EJ-SO-5 |
| 6-11-164 | EJ-EJ-SJ-13 | 6-11-236 | EJ-SAZ-SAZ-6 | 6-11-308 | EJ-EJ-SO-7 |
| 6-11-165 | EJ-EJ-SJ-8 | 6-11-237 | EJ-SML-SML-10 | 6-11-309 | EJ-EJ-EJ-41 |
| 6-11-166 | EJ-BSM-BSM-4 | 6-11-238 | EJ-SML-SML-5 | 6-11-310 | EJ-EJ-CB-1 |
| 6-11-167 | EJ-BSM-BSM-1 | 6-11-239 | EJ-SML-SML-12 | 6-11-311 | EJ-CA-CA-3 |
| 6-11-168 | EJ-BSM-BSM-5 | 6-11-240 | EJ-SML-SML-18 | 6-11-312 | EJ-CA-CA-4 |
| 6-11-169 | EJ-BSM-BSM-3 | 6-11-241 | EJ-SML-SML-6 | 6-11-313 | EJ-EJ-EA-8 |
| 6-11-170 | EJ-EJ-EJ-9 | 6-11-242 | EJ-SAZ-SAZ-1 | 6-11-314 | EJ-EJ-EA-4 |
| 6-11-171 | EJ-EJ-EJ-10 | 6-11-243 | EJ-SAZ-SAZ-9 | 6-11-315 | EJ-EJ-EA-1 |
| 6-11-172 | EJ-EJ-EJ-2 | 6-11-244 | EJ-SML-SML-15 | 6-11-316 | EJ-EJ-EA-3 |
| 6-11-173 | EJ-EJ-EJ-30 | 6-11-245 | EJ-EJ-SCN-19 | 6-11-317 | EJ-EJ-EA-5 |
| 6-11-174 | EJ-EJ-EJ-27 | 6-11-246 | EJ-EJ-SCN-18 | 6-11-318 | EJ-EJ-EA-2 |
| 6-11-175 | EJ-EJ-EC-1 | 6-11-247 | EJ-EJ-SCN-20 | 6-11-319 | EJ-EJ-EA-7 |
| 6-11-176 | EJ-TAN-TAN-2 | 6-11-248 | EJ-EJ-SCN-13 | 6-11-320 | EJ-EJ-EA-6 |
| 6-11-177 | EJ-EJ-EJ-18 | 6-11-249 | EJ-EJ-SCN-21 | 6-11-321 | EJ-CA-CA-6 |

Appendix I. *Continued.*

| Site no. | Field no. |
|---|---|
| 6-11-322 | EJ-CA-CA-7 |
| 6-11-323 | EJ-CA-CA-16 |
| 6-11-324 | EJ-CA-CA-5 |
| 6-11-325 | EJ-CA-CA-9 |
| 6-11-326 | EJ-CA-CA-10 |
| 6-11-327 | EJ-CA-CA-11 |
| 6-11-328 | EJ-SAA-SAA-8 |
| 6-11-329 | EJ-SAA-SAA-7 |
| 6-11-330 | EJ-SAA-SAA-9 |
| 6-11-331 | EJ-SAA-SAA-6 |
| 6-11-332 | EJ-SAA-SAA-20 |
| 6-11-333 | EJ-SAA-SAA-2 |
| 6-11-334 | EJ-SAA-SAA-5 |
| 6-11-335 | EJ-SAA-SAA-3 |
| 6-11-336 | EJ-SAA-SAA-4 |
| 6-11-337 | EJ-SAA-SAA-1 |
| 6-11-338 | EJ-EJ-LN-1 |
| 6-11-339 | EJ-YO-YO-2 |
| 6-11-340 | EJ-YO-YO-3 |
| 6-11-341 | EJ-YO-YO-1 |
| 6-11-342 | EJ-SAA-SAA-18 |
| 6-11-343 | EJ-SAA-SAA-19 |
| 6-11-344 | EJ-YO-YO-4 |
| 6-11-345 | EJ-YO-YO-6 |
| 6-11-346 | EJ-YO-YO-5 |
| 6-11-347 | EJ-YO-YO-10 |
| 6-11-348 | EJ-YO-YO-9 |
| 6-11-349 | EJ-YO-YO-8 |
| 6-11-350 | EJ-YO-YO-12 |
| 6-11-351 | EJ-YO-YO-16 |
| 6-11-352 | EJ-YO-YO-13 |
| 6-11-353 | EJ-EJ-BL-2 |
| 6-11-354 | EJ-CA-CA-22 |
| 6-11-355 | EJ-CA-CA-21 |
| 6-11-356 | EJ-CA-CA-19 |
| 6-11-357 | EJ-CA-CA-20 |
| 6-11-358 | EJ-EJ-BL-1 |
| 6-11-359 | EJ-CA-CA-15 |
| 6-11-360 | EJ-EJ-BL-3 |
| 6-11-361 | EJ-CA-CA-14 |
| 6-11-362 | EJ-CA-CA-13 |
| 6-12-1 | OC-SJP-SJP-111 |
| 6-12-2 | EJ-EJ-EJ-11 |
| 6-12-3 | EJ-EJ-EJ-40 |
| 6-12-4 | EJ-EJ-SCN-7 |
| 6-12-5 | EJ-CA-CA-17 |

## Appendix I: Site Numbers, Part C: Sites That Have Been Combined

| Site nos.* | Population |
|---|---|
| Late I | |
| **20**, 22 | 271 |
| 36, **37** | 274 |
| 51, **52** | 171 |
| 55, **56** | 62 |
| Monte Albán II | |
| **14**, 15 | 125 |
| 30, **31** | 164 |
| **39**, 40 | 267 |
| Monte Albán IIIA | |
| 19, **24**, 27, 30, 32, 33 | 6,710 |
| **58**, 59 | 54 |
| **60**, 82 | 77 |
| 63, **65**, 67–69 | 1,016 |
| 70–73, **74**–76, 94, 121 | 1,850 |
| 105, **106** | 46 |
| Monte Albán IV | |
| 2, **3** | 187 |
| **11**, 12 | 54 |
| 20, 21, **23** | 529 |
| 24, **25**, 27, 28 | 338 |
| Monte Albán V | |
| 38, **40** | 276 |
| **55**, 56 | 224 |
| **57**, 70–74, 124, 133 | 826 |
| **60**, 61 | 105 |
| 66, 67, **69** | 665 |
| 77–**80** | 98 |
| 82, **83**, 84, 104 | 706 |
| 110, **112** | 355 |
| 114, **121** | 277 |
| 138, **139** | 81 |
| **172**, 175 | 68 |
| **176**, 177, 274 | 2,970 |
| 187–**189**, 190–196 | 2,358 |
| **218**, 219 | 2,560 |
| 221, 302–**304**, 310 | 730 |
| 286, **287** | 124 |
| **328**, 330 | 213 |

* Largest component is bold type.

## Appendix II. Ejutla Site Data

The coding system devised for the Valley of Oaxaca regional settlement surveys was used in organizing the Ejutla site data to facilitate comparisons between the two regions. We have made modifications to some categories and have changed data presentation to make the files easier to read and use.

Data for all phase components were entered into Excel files and are presented below in four parts. The first part (a) includes site size (in ha), population, and occupational continuity; the second part (b) contains artifact information; the third part (c) presents environmental and modern land use information; and the fourth part (d) includes information on special artifacts and resources. Each phase component is on a separate line. General descriptions of all field-numbered sites with at least one mound, terrace, or other significant are included in Appendix VIII.

Coding Scheme

Each file begins with four columns that are used to identify each site. The first column is the area prefix (area). The area prefix for Ejutla is 6 (0–5 were used to identify survey regions in Oaxaca). The second column (phase) is the phase number. We used the Oaxaca numbering system and omitted the numbers for the three phases we did not identify in Ejutla (2 = Early Formative, 4 = Rosario, 5 = Monte Albán Early I, 6 = Monte Albán Late I, 7 = Monte Albán II, 8 = Monte Albán IIIA, 10 = Monte Albán IV, and 11 = Monte Albán V). The third column (site) is the site number. This numbering system restarts at one for each phase. When referred to in the text, the site number is preceded by the phase number or abbreviation for that phase. The fourth column (grid) is the grid square in which the site is located. When site boundaries extend beyond the limits of a grid square, the site is assigned to the square containing the largest proportion of the site. Our grid numbering system continues the grid employed in Oaxaca, which began with N1 as the southernmost row of the grid. Grid squares with south coordinates are indicated by a minus sign to distinguish them from the north grid squares.

| Column | Variable | Values |
|---|---|---|
| A. Population Data | | |
| Area | Site area in hectares | 000.0 ha |
| PD | Density of population | 0 = 5–10, 1 = 10–25, 2 = 25–50, 3 = other, ? = missing data |
| LP | Lower population estimate | — |
| HP | Upper population estimate | — |
| AP | Average population estimate | — |
| OC | Continuity of occupation | 0 = no prior or subsequent phase, 1 = subsequent phase, 2 = prior phase, 3 = both adjacent phases, ? = missing data |
| TL | Tierras Largas | 0 = absent, 1 = present, 9 = unknown |
| SJ | San José | 0 = absent, 1 = present, 9 = unknown |
| Gua | Guadalupe | 0 = absent, 1 = present, 9 = unknown |
| Ros | Rosario | 0 = absent, 1 = present, 9 = unknown |
| EI | Monte Albán Early I | 0 = absent, 1 = present, 9 = unknown |
| LI | Monte Albán Late I | 0 = absent, 1 = present, 9 = unknown |
| II | Monte Albán II | 0 = absent, 1 = present, 9 = unknown |
| IIIA | Monte Albán IIIA | 0 = absent, 1 = present, 9 = unknown |
| IIIB | Monte Albán IIIB | 0 = absent, 1 = present, 9 = unknown |
| IV | Monte Albán IV | 0 = absent, 1 = present, 9 = unknown |
| V | Monte Albán V | 0 = absent, 1 = present, 9 = unknown |
| B. Artifacts | | |
| SD | Sherd density | 0 = none, 1 = trace, 2 = very light, 3 = light, 4 = moderate, 5 = heavy |
| SC | Single component | 0 = no, 1 = yes |
| OD | Obsidian density | 0 = none, 1 = sparse, 2 = moderate, 3 = abundant |
| OCl | Obsidian color | 0 = none, 1 = gray, 2 = green, 3 = black, 4 = green and gray, 5 = green and black, 6 = gray and black, 7 = gray, green, and black, 8 = other |
| OP | Number of obsidian points | — |
| OB | Number of obsidian blades | — |
| OF | Number of obsidian flakes | — |
| OCr | Number of obsidian cores | — |
| Mn | Number of manos | — |
| Mt | Number of metates | — |
| C | Number of celts | — |
| GS | Number of other ground stone | — |
| CB | Chert blades | 0 = absent, 1 = present |
| CF | Chert flakes/other | 0 = absent, 1 = present |
| CC | Number of chert cores | — |
| QF | Quartz flakes/other | 0 = absent, 1 = present |
| S | Shell | 0 = absent, 1 = present |
| MA | Miscellaneous artifacts | 0 = absent, 1 = present |
| C. Environmental Data | | |
| MA | Distance to Monte Albán | 00.0 km |
| Elev | Elevation above sea level | 0000 m |

Appendix II. *Continued.*

| Column | Variable | Values |
|---|---|---|
| Zn | Environmental zone | 1 = low alluvium, 2 = high alluvium, 3 = lower piedmont, 4 = middle piedmont, 5 = high piedmont, 6 = mountain |
| Slp | Slope | 1 = flat, 2 = shallow, 3 = moderate, 4 = steep |
| HT | Hilltop or ridgetop | 0 = no, 1 = yes |
| SCh | Soil character | 1 = alluvium, 2 = bedrock |
| ST | Soil texture | 1 = mostly sand, 2 = sandy loam, 3 = loam, 4 = clayey loam, 5 = dark clay, 6 = sandy clay |
| SD | Soil depth | 0 = 0–20 cm, 1 = 20 cm–1 m, 2 = >1 m |
| SCl | Soil color | 0 = white, 1 = light brown, 2 = reddish, 3 = dark brown, 4 = dark gray/black |
| Er | Soil erosion | 0 = none, 1 = light, 2 = moderate, 3 = heavy |
| Alv | Alluviation | 0 = insignificant, 1 = significant |
| $H_2O$ | Distance to nearest water | 0.0 km |
| WT | Type of water source | 0 = main river, 1 = tributary stream, 2 = arroyo, 3 = spring, 4 = well |
| WD | Depth to water table | 0.0 m, 98 = deep, but depth not known |
| Irr | Type of irrigation | 0 = none, 1 = well, 2 = well with pump, 3 = valley floor canal, 4 = piedmont canal (now or in recent past), 5 = floodwater, 6 = portable pump from stream, 7 = terracing only |
| Dng | Drainage | 0 = well drained, 1 = requires drainage |
| Pl | Recency of plowing | 0 = never, 1 = this year, 2 = sometime in past |
| Pot | Pot hunting | 0 = none, 1 = some, 2 = heavy |
| Sci | Scientific excavation | 0 = none, 1 = present |
| Veg | Predominant vegetation | 0 = cleared, 1 = chamizo/willow (riverine), 2 = mesquite, 3 = cactus, 4 = grass, 5 = oak, 6 = pine |
| Lnd | Modern land use | 0 = collecting/hunting, 1 = town, 2 = farming, 3 = industrial, 4 = grazing, 5 = garbage |
| Crp | Predominant crops | 0 = none, 1 = milpa, 2 = alfalfa, 3 = castor beans, 4 = tobacco, 5 = truck gardening, 6 = sugarcane, 7 = carrizal, 8 = maguey |
| Spc | Special resources | 0 = none, 1 = quarryable stone, 2 = clay for pottery, 3 = salt, 4 = chert, 5 = mica, 6 = magnetite-hematite, 7 = other ores, 8 = other |

## Appendix II.A: Population Data

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 2 | 1 | 105 | 0.4 | 3 | 5 | 10 | 8 | 1 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 2 | 2 | 104 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 1 | 1 |
| 6 | 2 | 3 | −405 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 1 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 0 |
| 6 | 4 | 1 | 105 | 0.0 | 3 | 5 | 10 | 8 | 3 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 4 | 2 | 106 | 0.3 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 4 | 3 | 104 | 0.3 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 1 | 1 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 4 | 4 | 104 | 0.9 | 1 | 9 | 22 | 16 | 3 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 1 | 1 |
| 6 | 5 | 1 | 306 | 0.3 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 5 | 2 | 105 | 0.4 | 3 | 5 | 10 | 8 | 3 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 5 | 3 | −105 | 1.7 | 1 | 17 | 44 | 30 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 5 | 4 | 106 | 0.3 | 3 | 5 | 10 | 8 | 3 | 9 | 0 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 5 | 5 | 106 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 5 | 6 | −106 | 0.9 | 1 | 9 | 22 | 15 | 0 | 9 | 0 | 9 | 0 | 1 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 5 | 7 | −205 | 1.8 | 1 | 18 | 44 | 31 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 1 | 9 | 0 | 0 |
| 6 | 5 | 8 | −206 | 1.1 | 1 | 11 | 27 | 19 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 0 | 9 | 0 | 0 |
| 6 | 5 | 9 | −206 | 0.9 | 1 | 9 | 23 | 16 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 5 | 10 | −307 | 0.3 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 5 | 11 | −207 | 0.4 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 5 | 12 | 104 | 0.3 | 3 | 5 | 10 | 8 | 3 | 9 | 0 | 9 | 1 | 1 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 5 | 13 | 104 | 0.9 | 1 | 9 | 22 | 16 | 3 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 1 | 1 |
| 6 | 5 | 14 | −205 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 5 | 15 | −206 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 5 | 16 | −305 | 0.6 | 1 | 6 | 16 | 11 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 5 | 17 | −306 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 1 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 5 | 18 | −307 | 1.0 | 1 | 10 | 24 | 17 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 5 | 19 | −307 | 0.1 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 5 | 20 | −405 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 0 |
| 6 | 5 | 21 | −606 | 0.1 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 6 | 1 | 305 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 2 | 306 | 18.8 | 1 | 188 | 471 | 330 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 3 | 205 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 4 | 105 | 3.5 | 1 | 35 | 88 | 61 | 3 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 6 | 5 | 106 | 0.1 | 3 | 10 | 20 | 15 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 6 | 6 | 106 | 0.6 | 1 | 6 | 14 | 10 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 0 |
| 6 | 6 | 7 | −105 | 2.5 | 1 | 25 | 64 | 44 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 1 | 1 |
| 6 | 6 | 8 | −105 | 8.3 | 1 | 83 | 208 | 145 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 0 |
| 6 | 6 | 9 | −105 | 4.0 | 1 | 40 | 99 | 69 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 10 | 106 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 11 | −106 | 1.0 | 1 | 10 | 26 | 18 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 12 | 106 | 1.8 | 1 | 18 | 45 | 31 | 3 | 9 | 0 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 6 | 13 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 14 | 106 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 15 | 106 | 7.0 | 1 | 70 | 176 | 123 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 16 | 106 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 17 | −106 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 18 | −106 | 1.8 | 0 | 9 | 18 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 0 |
| 6 | 6 | 19 | −106 | 1.1 | 0 | 6 | 11 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 20 | −105 | 13.2 | 3 | 121 | 296 | 208 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 6 | 21 | −105 | 1.5 | 1 | 14 | 36 | 25 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 22 | −105 | 3.6 | 1 | 36 | 90 | 63 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 6 | 23 | 208 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 24 | 208 | 2.2 | 1 | 24 | 58 | 42 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 6 | 25 | 209 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 26 | 108 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 27 | −108 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 28 | 108 | 2.9 | 1 | 29 | 72 | 50 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 29 | −205 | 7.0 | 1 | 70 | 174 | 122 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 6 | 30 | −206 | 4.9 | 1 | 48 | 121 | 85 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 0 | 9 | 0 | 0 |
| 6 | 6 | 31 | −206 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 32 | −206 | 1.2 | 1 | 12 | 30 | 21 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 33 | −206 | 0.9 | 1 | 9 | 23 | 16 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 34 | −206 | 5.3 | 1 | 53 | 132 | 93 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 6 | 35 | −207 | 7.8 | 1 | 78 | 195 | 136 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 6 | 36 | −207 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 6 | 37 | −207 | 15.2 | 1 | 152 | 380 | 266 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 6 | 38 | 103 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 39 | −104 | 29.7 | 0 | 148 | 297 | 222 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 6 | 40 | 104 | 1.0 | 1 | 10 | 26 | 18 | 2 | 9 | 0 | 9 | 1 | 1 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 6 | 41 | 104 | 2.3 | 1 | 23 | 58 | 41 | 3 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 1 | 1 |
| 6 | 6 | 42 | 104 | 1.7 | 3 | 17 | 44 | 30 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 43 | −104 | 0.7 | 1 | 7 | 18 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 44 | 104 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |

Appendix II.A: *Continued.*

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 6 | 45 | −205 | 0.9 | 1 | 9 | 23 | 16 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 46 | −206 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 47 | −206 | 9.8 | 0 | 49 | 98 | 73 | 3 | 9 | 9 | 9 | 9 | 1 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 6 | 48 | −405 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 49 | −405 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 6 | 50 | −306 | 2.3 | 1 | 23 | 56 | 39 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 6 | 51 | −305 | 3.5 | 1 | 35 | 86 | 61 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 6 | 52 | −305 | 6.3 | 1 | 63 | 157 | 110 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 6 | 53 | −307 | 5.5 | 1 | 55 | 137 | 96 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 6 | 54 | −307 | 1.0 | 1 | 10 | 24 | 17 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 55 | −307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 56 | −307 | 3.1 | 1 | 31 | 77 | 54 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 6 | 57 | −307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 58 | −405 | 10.6 | 1 | 106 | 266 | 186 | 3 | 9 | 1 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 0 |
| 6 | 6 | 59 | −405 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 60 | −506 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 0 |
| 6 | 6 | 61 | −606 | 6.1 | 2 | 152 | 304 | 228 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 6 | 62 | −606 | 2.5 | 0 | 13 | 25 | 19 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 6 | 6 | 63 | −305 | 3.5 | 1 | 35 | 88 | 62 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 7 | 1 | 206 | 0.2 | 3 | 10 | 20 | 15 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 7 | 2 | 105 | 3.5 | 1 | 35 | 88 | 61 | 3 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 7 | 3 | 107 | 0.5 | 1 | 5 | 13 | 9 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 1 |
| 6 | 7 | 4 | 106 | 0.6 | 1 | 6 | 14 | 10 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 5 | −105 | 0.3 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 6 | 106 | 0.6 | 1 | 6 | 15 | 10 | 3 | 9 | 0 | 9 | 1 | 1 | 1 | 1 | 1 | 9 |  | 1 |
| 6 | 7 | 7 | −106 | 0.0 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 0 |
| 6 | 7 | 8 | −106 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 9 | −205 | 1.8 | 0 | 9 | 18 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 10 | 208 | 1.9 | 1 | 19 | 48 | 34 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 11 | −205 | 3.0 | 1 | 30 | 74 | 52 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 12 | −206 | 1.1 | 1 | 11 | 27 | 19 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 13 | −207 | 0.4 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 1 |
| 6 | 7 | 14 | −207 | 6.4 | 1 | 64 | 160 | 112 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 15 | −207 | 1.7 | 0 | 8 | 17 | 13 | 3 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 7 | 16 | −207 | 36.9 | 1 | 369 | 922 | 646 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 7 | 17 | −207 | 0.2 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 0 |
| 6 | 7 | 18 | 104 | 0.9 | 1 | 9 | 22 | 16 | 2 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 1 | 1 |
| 6 | 7 | 19 | 104 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 20 | 104 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 21 | −304 | 1.4 | 3 | 6 | 14 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 22 | −206 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 23 | −206 | 0.1 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 24 | −304 | 1.0 | 1 | 10 | 25 | 18 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 25 | −304 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 26 | −305 | 3.5 | 1 | 35 | 88 | 62 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 7 | 27 | −305 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 28 | −305 | 0.8 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 29 | −405 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 30 | −405 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 31 | −405 | 8.9 | 1 | 89 | 223 | 156 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 32 | −306 | 0.2 | 3 | 5 | 10 | 8 | 3 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 7 | 33 | −305 | 1.5 | 0 | 8 | 15 | 12 | 3 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 7 | 34 | −305 | 0.7 | 1 | 7 | 18 | 13 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 0 |
| 6 | 7 | 35 | −307 | 6.2 | 1 | 62 | 155 | 109 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 7 | 36 | −307 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 37 | −409 | 0.8 | 1 | 8 | 19 | 13 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 0 |
| 6 | 7 | 38 | −405 | 0.4 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 7 | 39 | −405 | 14.5 | 1 | 145 | 362 | 253 | 3 | 9 | 1 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 0 |
| 6 | 7 | 40 | −405 | 0.8 | 1 | 8 | 19 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 7 | 41 | −405 | 1.9 | 0 | 9 | 19 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 42 | −605 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 43 | −605 | 0.3 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 7 | 44 | −606 | 8.8 | 2 | 221 | 442 | 332 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 7 | 45 | −606 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 7 | 46 | −606 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 0 |
| 6 | 8 | 1 | 305 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 2 | 305 | 0.5 | 1 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 3 | 205 | 0.5 | 1 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 4 | 205 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 5 | 205 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 6 | 205 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 7 | 307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |

## Appendix II.A: *Continued.*

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 8 | 8 | 105 | 7.3 | 0 | 37 | 73 | 55 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 9 | 206 | 6.7 | 3 | 159 | 323 | 241 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 8 | 10 | 206 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 11 | 105 | 0.9 | 1 | 8 | 21 | 15 | 2 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 0 |
| 6 | 8 | 12 | 105 | 1.7 | 1 | 17 | 44 | 30 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 13 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 14 | 107 | 0.7 | 1 | 7 | 17 | 12 | 3 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 1 |
| 6 | 8 | 15 | 106 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 16 | 106 | 2.5 | 1 | 25 | 62 | 43 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 17 | 106 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 18 | 106 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 19 | −105 | 16.2 | 0 | 81 | 162 | 121 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 20 | −105 | 2.7 | 1 | 27 | 67 | 47 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 21 | −105 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 22 | −106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 23 | −106 | 0.9 | 1 | 9 | 22 | 16 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 24 | −106 | 582.33 | 3 | 3,942 | 8,908 | 6,425 | 3 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 8 | 25 | 106 | 1.0 | 1 | 10 | 25 | 17 | 2 | 9 | 0 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 8 | 26 | 106 | 0.6 | 1 | 6 | 16 | 11 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 27 | −106 | 0.9 | 1 | 9 | 22 | 15 | 0 | 9 | 0 | 9 | 0 | 1 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 28 | −105 | 4.4 | 0 | 22 | 44 | 33 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 29 | −106 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 30 | −106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 31 | −106 | 17.0 | 3 | 187 | 453 | 320 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 8 | 32 | −205 | 6.6 | 3 | 55 | 134 | 95 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 33 | −105 | 3.2 | 3 | 27 | 65 | 46 | 0 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 34 | 208 | 3.9 | 3 | 335 | 670 | 502 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 35 | 208 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 36 | 108 | 0.3 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 37 | 109 | 10.7 | 1 | 110 | 258 | 184 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 38 | −107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 39 | −107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 40 | 108 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 41 | −108 | 0.5 | 1 | 5 | 11 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 42 | −108 | 1.1 | 3 | 17 | 38 | 28 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 43 | −108 | 4.6 | 3 | 61 | 142 | 102 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 44 | −108 | 4.3 | 0 | 22 | 43 | 33 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 45 | −107 | 0.9 | 1 | 9 | 23 | 16 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 46 | −107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 47 | −205 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 48 | −206 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 49 | −206 | 1.9 | 0 | 10 | 19 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 50 | −206 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 51 | −206 | 0.8 | 1 | 8 | 19 | 13 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 52 | −207 | 1.4 | 0 | 7 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 53 | −207 | 1.9 | 1 | 19 | 47 | 33 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 54 | −207 | 6.3 | 0 | 32 | 63 | 48 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 55 | −208 | 1.5 | 1 | 15 | 38 | 27 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 56 | −208 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 57 | −206 | 8.2 | 1 | 85 | 210 | 148 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 0 |
| 6 | 8 | 58 | −206 | 2.6 | 1 | 26 | 66 | 46 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 0 |
| 6 | 8 | 59 | −206 | 0.1 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 0 |
| 6 | 8 | 60 | −306 | 4.0 | 1 | 40 | 99 | 69 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 61 | −306 | 1.6 | 1 | 16 | 40 | 28 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 62 | −206 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 63 | −206 | 0.7 | 1 | 7 | 18 | 13 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 64 | −206 | 0.9 | 0 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 65 | −206 | 54.1 | 1 | 541 | 1,352 | 946 | 3 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 8 | 66 | −207 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 67 | −207 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 68 | −207 | 2.3 | 1 | 23 | 58 | 41 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 69 | −207 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 70 | −307 | 0.5 | 1 | 5 | 13 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 71 | −207 | 2.0 | 1 | 20 | 49 | 34 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 72 | −307 | 0.7 | 1 | 7 | 17 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 73 | −307 | 2.0 | 1 | 20 | 51 | 36 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 74 | −207 | 97.7 | 1 | 977 | 2,442 | 1,709 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 8 | 75 | −207 | 0.6 | 1 | 6 | 16 | 11 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 76 | −207 | 1.0 | 1 | 10 | 25 | 18 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 8 | 77 | −207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 78 | −207 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 79 | −207 | 2.0 | 1 | 20 | 49 | 34 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |

ppendix II.A: *Continued.*

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 8 | 80 | −307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 81 | −307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 82 | −306 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 83 | −306 | 0.7 | 1 | 7 | 17 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 84 | −307 | 0.7 | 1 | 7 | 17 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 85 | −307 | 5.8 | 1 | 58 | 146 | 102 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 86 | −306 | 1.3 | 1 | 13 | 33 | 23 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 87 | −308 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 88 | −308 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 89 | −308 | 0.7 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 90 | −308 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 91 | −209 | 0.2 | 3 | 20 | 40 | 30 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 8 | 92 | −107 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 93 | −307 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 94 | −307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 95 | −103 | 1.2 | 0 | 6 | 12 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 96 | −104 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 97 | −103 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 98 | −103 | 0.4 | 3 | 45 | 90 | 68 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 99 | −103 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 100 | −103 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 101 | −104 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 102 | −104 | 0.5 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 8 | 103 | −104 | 0.1 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 8 | 104 | −104 | 1.9 | 1 | 19 | 47 | 33 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 105 | −104 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 106 | −104 | 2.2 | 1 | 22 | 54 | 38 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 107 | −203 | 4.5 | 1 | 45 | 111 | 78 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 108 | 104 | 1.0 | 1 | 10 | 26 | 18 | 0 | 9 | 0 | 9 | 1 | 1 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 109 | −204 | 19.8 | 3 | 331 | 663 | 497 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 8 | 110 | −204 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 111 | −204 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 112 | −205 | 5.6 | 1 | 56 | 139 | 97 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 113 | −206 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 114 | −305 | 0.3 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 8 | 115 | −305 | 14.5 | 1 | 145 | 362 | 254 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 116 | −306 | 1.4 | 1 | 14 | 34 | 24 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 8 | 117 | −305 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 118 | −305 | 1.5 | 1 | 15 | 38 | 27 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 8 | 119 | −305 | 0.7 | 1 | 7 | 18 | 13 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 0 |
| 6 | 8 | 120 | −306 | 6.1 | 1 | 61 | 153 | 107 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 121 | −307 | 0.8 | 1 | 8 | 19 | 13 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 122 | −307 | 2.0 | 0 | 10 | 20 | 15 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 123 | −307 | 1.3 | 0 | 6 | 13 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 124 | −307 | 5.5 | 1 | 55 | 137 | 96 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 8 | 125 | −307 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 126 | −409 | 0.8 | 1 | 8 | 19 | 13 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 0 |
| 6 | 8 | 127 | −409 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 128 | −405 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 8 | 129 | −405 | 0.4 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 8 | 130 | −405 | 14.5 | 1 | 145 | 362 | 253 | 3 | 9 | 1 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 0 |
| 6 | 8 | 131 | −605 | 0.3 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 8 | 132 | −606 | 8.8 | 2 | 221 | 442 | 332 | 3 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 8 | 133 | −606 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 134 | −408 | 0.5 | 1 | 5 | 12 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 0 |
| 6 | 8 | 135 | −409 | 8.4 | 3 | 166 | 343 | 255 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 10 | 1 | 107 | 0.2 | 3 | 10 | 20 | 15 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 2 | 106 | 5.1 | 1 | 51 | 127 | 89 | 3 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 1 |
| 6 | 10 | 3 | 107 | 0.5 | 3 | 65 | 130 | 98 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 4 | −105 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 5 | −105 | 0.5 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 6 | −106 | 6.0 | 0 | 30 | 60 | 45 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 0 |
| 6 | 10 | 7 | −106 | 26.4 | 1 | 264 | 660 | 462 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 0 |
| 6 | 10 | 8 | −106 | 1.1 | 1 | 11 | 27 | 19 | 3 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 10 | 9 | −106 | 0.3 | 3 | 5 | 10 | 8 | 3 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 10 | 10 | −206 | 8.2 | 1 | 85 | 210 | 148 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 0 |
| 6 | 10 | 11 | −206 | 2.6 | 1 | 26 | 66 | 46 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 0 |
| 6 | 10 | 12 | −206 | 0.1 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 0 |
| 6 | 10 | 13 | −207 | 16.4 | 1 | 164 | 411 | 288 | 3 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 1 |
| 6 | 10 | 14 | −206 | 0.9 | 1 | 9 | 24 | 16 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 0 |
| 6 | 10 | 15 | −207 | 2.7 | 1 | 27 | 68 | 48 | 3 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 10 | 16 | −208 | 0.5 | 1 | 5 | 13 | 9 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |

## Appendix II.A: *Continued.*

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 10 | 17 | −208 | 0.7 | 1 | 7 | 18 | 13 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 18 | −208 | 0.6 | 3 | 6 | 16 | 11 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 19 | −208 | 0.3 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 20 | −208 | 7.5 | 3 | 49 | 98 | 73 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 21 | −209 | 0.5 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 22 | −209 | 0.4 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 23 | −308 | 28.1 | 3 | 299 | 598 | 448 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 24 | −209 | 1.8 | 3 | 75 | 150 | 112 | 3 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 10 | 25 | −309 | 9.4 | 3 | 135 | 271 | 203 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 26 | −209 | 0.5 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 27 | −309 | 0.1 | 3 | 10 | 20 | 15 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 28 | −309 | 0.0 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 29 | −106 | 0.9 | 1 | 9 | 22 | 15 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 30 | 103 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 31 | −103 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 32 | −103 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 33 | −103 | 0.7 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 34 | −103 | 0.4 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 35 | −103 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 36 | −103 | 1.0 | 0 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 37 | −104 | 0.4 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 38 | −103 | 0.1 | 3 | 5 | 10 | 8 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 39 | −104 | 6.8 | 1 | 68 | 169 | 118 | 3 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 10 | 40 | −104 | 3.0 | 3 | 35 | 70 | 52 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 41 | −104 | 0.9 | 1 | 9 | 22 | 16 | 1 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 10 | 42 | 104 | 0.9 | 1 | 9 | 22 | 16 | 1 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 1 | 1 |
| 6 | 10 | 43 | −104 | 1.5 | 3 | 35 | 70 | 52 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 44 | −104 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 45 | −204 | 10.2 | 3 | 247 | 494 | 371 | 3 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 10 | 46 | −205 | 0.8 | 1 | 8 | 21 | 15 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 47 | −304 | 1.2 | 1 | 12 | 29 | 20 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 48 | −307 | 1.4 | 0 | 7 | 14 | 10 | 3 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 10 | 49 | −307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 50 | −308 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 0 |
| 6 | 10 | 51 | −405 | 0.2 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 0 |
| 6 | 10 | 52 | −606 | 0.4 | 3 | 5 | 10 | 8 | 3 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 11 | 1 | 305 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 2 | 306 | 0.8 | 0 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 3 | 305 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 4 | 205 | 0.8 | 3 | 8 | 20 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 5 | 205 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 6 | 305 | 1.1 | 1 | 11 | 28 | 19 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 7 | 205 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 8 | 205 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 9 | 305 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 10 | 305 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 11 | 305 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 12 | 306 | 0.9 | 1 | 9 | 23 | 16 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 13 | 306 | 0.7 | 1 | 7 | 16 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 14 | 306 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 15 | 306 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 16 | 307 | 1.3 | 1 | 13 | 33 | 23 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 17 | 307 | 0.7 | 1 | 7 | 18 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 18 | 307 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 19 | 306 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 20 | 306 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 21 | 306 | 21.3 | 1 | 213 | 533 | 373 | 0 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 22 | 307 | 2.5 | 1 | 25 | 62 | 43 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 23 | 207 | 1.1 | 3 | 6 | 11 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 24 | 207 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 25 | 207 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 26 | 207 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 27 | 207 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 28 | 206 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 29 | 207 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 30 | 307 | 3.2 | 1 | 32 | 80 | 56 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 31 | 307 | 0.5 | 1 | 5 | 13 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 32 | 307 | 0.6 | 1 | 6 | 15 | 11 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 33 | 307 | 1.3 | 1 | 13 | 32 | 22 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 34 | 307 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 35 | 207 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 36 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |

Appendix II.A: *Continued.*

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 37 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 38 | 205 | 1.0 | 3 | 10 | 25 | 17 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 39 | 205 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 40 | 205 | 14.8 | 1 | 148 | 370 | 259 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 41 | 105 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 42 | 205 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 43 | 205 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 44 | 206 | 1.2 | 3 | 29 | 63 | 46 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 11 | 45 | 206 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 46 | 206 | 32.8 | 1 | 333 | 828 | 580 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 47 | 207 | 1.7 | 1 | 17 | 42 | 29 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 48 | 207 | 0.6 | 3 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 49 | 207 | 1.9 | 1 | 19 | 47 | 33 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 50 | 206 | 6.5 | 1 | 64 | 161 | 113 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 51 | 206 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 52 | 206 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 53 | 206 | 1.8 | 1 | 18 | 45 | 32 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 54 | 106 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 55 | 206 | 11.1 | 1 | 115 | 282 | 198 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 56 | 206 | 1.5 | 1 | 15 | 37 | 26 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 57 | 207 | 43.3 | 1 | 436 | 1,088 | 762 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 58 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 59 | 105 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 60 | 105 | 5.6 | 1 | 56 | 139 | 97 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 61 | 105 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 62 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 63 | 106 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 64 | 106 | 1.0 | 1 | 10 | 24 | 17 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 65 | 106 | 0.8 | 1 | 8 | 20 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 66 | 106 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 67 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 68 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 69 | 106 | 25.0 | 3 | 393 | 905 | 649 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 11 | 70 | 107 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 71 | 107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 72 | 107 | 0.7 | 3 | 7 | 18 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 73 | 107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 74 | 107 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 75 | 107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 76 | 107 | 0.7 | 1 | 7 | 16 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 77 | 107 | 2.2 | 1 | 22 | 55 | 38 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 78 | 107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 79 | 107 | 0.7 | 1 | 7 | 16 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 80 | 107 | 2.3 | 1 | 23 | 57 | 40 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 81 | 107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 82 | 106 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 83 | 106 | 39.3 | 3 | 395 | 969 | 682 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 84 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 85 | −105 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 86 | −105 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 87 | −105 | 1.0 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 88 | −105 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 89 | −105 | 0.8 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 90 | −105 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 91 | 106 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 92 | 106 | 0.8 | 1 | 8 | 19 | 13 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 93 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 94 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 95 | −106 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 96 | 106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 97 | 106 | 0.9 | 1 | 9 | 22 | 15 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 98 | 106 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 99 | 106 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 100 | 106 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 101 | 106 | 0.7 | 1 | 7 | 18 | 12 | 0 | 9 | 0 | 9 | 1 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 11 | 102 | −106 | 0.9 | 1 | 9 | 22 | 15 | 0 | 9 | 0 | 9 | 0 | 1 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 103 | 106 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 104 | 106 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 105 | 107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 106 | 107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 107 | −106 | 1.2 | 1 | 12 | 31 | 22 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 108 | −105 | 8.7 | 1 | 87 | 218 | 152 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |

## Appendix II.A: *Continued.*

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 109 | −105 | 3.5 | 0 | 17 | 35 | 26 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 110 | −106 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 111 | −106 | 1.1 | 3 | 6 | 11 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 112 | −106 | 26.6 | 3 | 207 | 488 | 347 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 11 | 113 | −105 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 114 | −105 | 2.8 | 1 | 28 | 71 | 50 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 115 | −106 | 1.1 | 1 | 11 | 27 | 19 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 116 | −106 | 3.7 | 3 | 55 | 122 | 88 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 11 | 117 | −106 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 118 | −106 | 1.6 | 1 | 16 | 39 | 28 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 119 | −107 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 120 | −107 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 121 | −205 | 14.7 | 1 | 132 | 321 | 227 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 11 | 122 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 123 | 207 | 1.4 | 1 | 14 | 36 | 25 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 124 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 125 | 207 | 0.8 | 1 | 8 | 20 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 126 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 127 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 128 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 129 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 130 | 207 | 1.3 | 0 | 7 | 13 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 131 | 207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 132 | 208 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 133 | 107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 134 | 107 | 1.0 | 1 | 10 | 24 | 17 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 135 | 107 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 136 | 107 | 0.7 | 1 | 7 | 16 | 11 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 137 | 208 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 138 | 208 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 139 | 208 | 3.9 | 1 | 43 | 102 | 73 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 140 | 209 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 141 | 209 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 142 | 209 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 143 | 209 | 0.7 | 1 | 7 | 18 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 144 | 209 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 145 | 208 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 146 | 107 | 0.6 | 1 | 6 | 16 | 11 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 147 | −107 | 1.2 | 1 | 12 | 30 | 21 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 148 | −107 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 149 | −107 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 150 | 108 | 0.8 | 1 | 8 | 21 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 151 | −108 | 5.2 | 3 | 63 | 150 | 106 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 152 | −108 | 1.0 | 1 | 10 | 24 | 17 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 153 | −108 | 1.9 | 1 | 19 | 47 | 33 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 154 | −107 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 155 | −107 | 0.9 | 1 | 9 | 23 | 16 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 156 | −207 | 10.2 | 0 | 56 | 112 | 84 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 157 | −205 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 158 | −205 | 4.0 | 1 | 40 | 99 | 69 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 159 | −205 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 160 | −205 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 161 | −205 | 1.2 | 1 | 12 | 30 | 21 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 162 | −205 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 163 | −206 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 164 | −206 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 165 | −206 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 166 | −207 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 167 | −207 | 1.7 | 1 | 17 | 42 | 29 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 168 | −207 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 169 | −207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 170 | −207 | 6.6 | 1 | 66 | 165 | 116 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 171 | −207 | 0.5 | 1 | 5 | 13 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 172 | −207 | 3.4 | 1 | 34 | 85 | 60 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 173 | −208 | 3.2 | 3 | 245 | 490 | 368 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 174 | −208 | 4.9 | 3 | 292 | 596 | 444 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 175 | −208 | 0.4 | 3 | 5 | 10 | 8 | 9 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 176 | −306 | 168.23 | 1 | 1,682 | 4,206 | 2,938 | 0 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 11 | 177 | −306 | 1.4 | 1 | 14 | 34 | 24 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 178 | −206 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 179 | −206 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 180 | −206 | 1.9 | 1 | 19 | 48 | 34 | 0 | 9 | 0 | 9 | 0 | 1 | 1 | 0 | 0 | 9 | 0 | 1 |

Appendix II.A: *Continued.*

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 181 | −206 | 0.7 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 182 | −207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 183 | −206 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 184 | −206 | 0.7 | 1 | 7 | 18 | 13 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 185 | −206 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 186 | −206 | 1.3 | 1 | 13 | 33 | 23 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 187 | −206 | 4.3 | 1 | 43 | 107 | 75 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 188 | −207 | 6.9 | 1 | 69 | 172 | 121 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 1 | 1 |
| 6 | 11 | 189 | −207 | 118.47 | 1 | 1,185 | 2,962 | 2,073 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 11 | 190 | −307 | 0.7 | 1 | 7 | 17 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 191 | −207 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 192 | −207 | 1.0 | 1 | 10 | 26 | 18 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 193 | −207 | 0.5 | 1 | 5 | 13 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 194 | −207 | 1.5 | 1 | 15 | 38 | 26 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 11 | 195 | −207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 196 | −207 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 197 | −307 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 198 | −207 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 199 | −306 | 1.1 | 1 | 11 | 27 | 19 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 200 | −307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 201 | −307 | 5.4 | 1 | 54 | 134 | 94 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 202 | −307 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 203 | −307 | 0.5 | 1 | 5 | 13 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 204 | −208 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 205 | −208 | 2.1 | 1 | 21 | 52 | 37 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 206 | −208 | 0.7 | 1 | 7 | 18 | 13 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 207 | −208 | 1.5 | 1 | 15 | 38 | 27 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 208 | −208 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 209 | −208 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 210 | −208 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 211 | −208 | 1.0 | 3 | 10 | 26 | 18 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 212 | −208 | 0.3 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 213 | −308 | 0.7 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 214 | −308 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 215 | −308 | 1.9 | 0 | 9 | 18 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 216 | −308 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 217 | −308 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 218 | −209 | 104.72 | 3 | 1,564 | 3,535 | 2,550 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 11 | 219 | −309 | 1.4 | 0 | 7 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 220 | −307 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 221 | −307 | 2.7 | 1 | 33 | 76 | 54 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 222 | 103 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 223 | 103 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 224 | 103 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 225 | 104 | 0.6 | 1 | 6 | 14 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 226 | 103 | 1.0 | 3 | 30 | 60 | 45 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 227 | 103 | 1.3 | 0 | 7 | 13 | 10 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 228 | 103 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 229 | −103 | 1.7 | 0 | 8 | 17 | 13 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 230 | −103 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 231 | −103 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 232 | −103 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 233 | −103 | 0.4 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 234 | −103 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 235 | −103 | 0.4 | 3 | 45 | 90 | 68 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 236 | −103 | 1.0 | 0 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 237 | −104 | 0.1 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 238 | −103 | 0.1 | 3 | 5 | 10 | 8 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 239 | −104 | 1.4 | 0 | 7 | 14 | 11 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 11 | 240 | −104 | 1.0 | 1 | 10 | 26 | 18 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 241 | −103 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 242 | −103 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 243 | −104 | 30.9 | 1 | 309 | 773 | 541 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 244 | −104 | 0.9 | 1 | 9 | 22 | 16 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 1 |
| 6 | 11 | 245 | 104 | 1.0 | 1 | 10 | 26 | 18 | 0 | 9 | 0 | 9 | 1 | 1 | 1 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 246 | 104 | 2.3 | 1 | 23 | 58 | 41 | 2 | 9 | 1 | 9 | 1 | 1 | 1 | 1 | 0 | 9 | 1 | 1 |
| 6 | 11 | 247 | 104 | 0.7 | 1 | 7 | 18 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 248 | 104 | 1.2 | 0 | 6 | 12 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 249 | 104 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 250 | −104 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 251 | 104 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 252 | 104 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |

**Appendix II.A:** ***Continued.***

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 253 | −104 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 254 | −104 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 255 | −104 | 0.5 | 1 | 5 | 12 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 256 | −104 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 257 | −204 | 20.6 | 3 | 331 | 663 | 497 | 2 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 1 | 1 |
| 6 | 11 | 258 | −204 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 259 | −204 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 260 | −204 | 4.6 | 3 | 71 | 166 | 119 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 261 | −204 | 0.7 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 262 | −204 | 0.4 | 1 | 5 | 11 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 263 | −204 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 264 | −304 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 265 | −304 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 266 | −304 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 267 | −205 | 0.5 | 1 | 5 | 13 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 268 | −205 | 0.5 | 1 | 5 | 12 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 269 | −205 | 0.8 | 1 | 8 | 21 | 15 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 270 | −205 | 1.2 | 1 | 12 | 30 | 21 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 271 | −205 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 272 | −205 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 273 | −206 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 274 | −206 | 0.5 | 1 | 5 | 12 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 275 | −304 | 1.6 | 1 | 16 | 39 | 27 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 276 | −304 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 277 | −304 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 278 | −305 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 279 | −305 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 280 | −305 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 281 | −305 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 282 | −305 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 283 | −305 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 284 | −305 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 285 | −305 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 286 | −305 | 1.6 | 1 | 16 | 41 | 28 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 287 | −305 | 12.8 | 0 | 64 | 128 | 96 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 288 | −305 | 0.6 | 1 | 6 | 16 | 11 | 0 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 0 | 1 |
| 6 | 11 | 289 | −305 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 290 | −305 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 291 | −305 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 292 | −305 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 293 | −305 | 0.8 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 294 | −405 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 295 | −405 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 296 | −305 | 3.1 | 1 | 31 | 79 | 55 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 297 | −305 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 298 | −306 | 1.6 | 0 | 8 | 16 | 12 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 299 | −306 | 0.7 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 300 | −306 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 301 | −307 | 0.5 | 1 | 5 | 13 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 302 | −307 | 5.7 | 1 | 57 | 143 | 100 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 303 | −307 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 304 | −307 | 74.6 | 0 | 373 | 746 | 560 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 11 | 305 | −307 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 306 | −307 | 3.3 | 0 | 17 | 33 | 25 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 307 | −307 | 7.1 | 0 | 35 | 71 | 54 | 0 | 9 | 0 | 9 | 0 | 0 | 1 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 308 | −307 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 309 | −307 | 2.0 | 1 | 20 | 49 | 34 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 310 | −307 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 311 | −308 | 1.5 | 0 | 8 | 15 | 11 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 312 | −308 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 313 | −308 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 314 | −308 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 315 | −308 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 316 | −308 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 317 | −308 | 0.8 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 318 | −308 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 319 | −408 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 320 | −408 | 3.7 | 3 | 35 | 70 | 52 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 321 | −309 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 322 | −309 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 323 | −309 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 324 | −308 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |

Appendix II.A: *Continued.*

| Ar | Ph | Site | Grid | Area | PD | LP | HP | AP | OC | TL | SJ | Gua | Ros | EI | LI | II | IIIA | IIIB | IV | V |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 325 | −309 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 326 | −309 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 327 | −409 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 328 | −405 | 10.8 | 1 | 108 | 269 | 188 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 329 | −405 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 330 | −405 | 1.5 | 1 | 15 | 36 | 25 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |
| 6 | 11 | 331 | −405 | 3.9 | 1 | 39 | 98 | 69 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 11 | 332 | −406 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 333 | −405 | 2.3 | 0 | 11 | 23 | 17 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 334 | −405 | 1.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 335 | −405 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 336 | −405 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 337 | −405 | 0.8 | 1 | 8 | 19 | 14 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 0 | 9 | 0 | 1 |
| 6 | 11 | 338 | −505 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 339 | −505 | 1.2 | 0 | 6 | 12 | 9 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 340 | −505 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 341 | −505 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 342 | −406 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 343 | −406 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 344 | −505 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 345 | −605 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 346 | −605 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 1 | 1 | 9 | 0 | 1 |
| 6 | 11 | 347 | −605 | 0.7 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 348 | −505 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 349 | −506 | 0.2 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 350 | −606 | 4.3 | 1 | 43 | 107 | 75 | 2 | 9 | 0 | 9 | 0 | 1 | 1 | 1 | 1 | 9 | 1 | 1 |
| 6 | 11 | 351 | −606 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 352 | −606 | 0.5 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 353 | −507 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 354 | −408 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 355 | −408 | 0.6 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 356 | −408 | 0.3 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 357 | −408 | 0.4 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 358 | −408 | 0.0 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 359 | −408 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 360 | −507 | 7.0 | 0 | 35 | 70 | 52 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 361 | −409 | 0.1 | 3 | 5 | 10 | 8 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 1 |
| 6 | 11 | 362 | −409 | 2.8 | 3 | 28 | 55 | 42 | 0 | 9 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 1 |

## Appendix II.B: Artifact Data

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 2 | 1 | 105 | 2 | 0 | 2 | 4 | 0 | 5 | 3 | 3 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 6 | 2 | 2 | 104 | 2 | 0 | 2 | 4 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 2 | 3 | −405 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 4 | 1 | 105 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 6 | 4 | 2 | 106 | 2 | 0 | 2 | 7 | 0 | 6 | 5 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 6 | 4 | 3 | 104 | 2 | 0 | 2 | 4 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 4 | 4 | 104 | 2 | 0 | 2 | 4 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 5 | 1 | 306 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 5 | 2 | 105 | 2 | 0 | 2 | 4 | 0 | 5 | 3 | 3 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 6 | 5 | 3 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 5 | 4 | 106 | 2 | 0 | 2 | 7 | 0 | 6 | 5 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 6 | 5 | 5 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 5 | 6 | −106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 6 | 5 | 7 | −205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 5 | 8 | −206 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 5 | 9 | −206 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 5 | 10 | −307 | 1 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 5 | 11 | −207 | 2 | 0 | 1 | 6 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 5 | 12 | 104 | 2 | 0 | 2 | 4 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 5 | 13 | 104 | 2 | 0 | 2 | 4 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 5 | 14 | −205 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 5 | 15 | −206 | 1 | 0 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 5 | 16 | −305 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 6 | 5 | 17 | −306 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 5 | 18 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 5 | 19 | −307 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 5 | 20 | −405 | 1 | 0 | 3 | 7 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 5 | 21 | −606 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 1 | 305 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 2 | 306 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 6 | 6 | 3 | 205 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 6 | 4 | 105 | 2 | 0 | 2 | 4 | 0 | 8 | 6 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 6 | 6 | 5 | 106 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 6 | 6 | 6 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 7 | −105 | 2 | 0 | 1 | 7 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 8 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 9 | −105 | 2 | 0 | 1 | 4 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 6 | 6 | 10 | 106 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 6 | 11 | −106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 12 | 106 | 2 | 0 | 2 | 7 | 0 | 6 | 5 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 6 | 6 | 13 | 106 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 14 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 15 | 106 | 2 | 0 | 1 | 4 | 0 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 16 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 17 | −106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 18 | −106 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 19 | −106 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 6 | 20 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 21 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 22 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 23 | 208 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 24 | 208 | 2 | 0 | 1 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 6 | 25 | 209 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 26 | 108 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 27 | −108 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 28 | 108 | 2 | 1 | 2 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 29 | −205 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 6 | 30 | −206 | 2 | 0 | 2 | 4 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 6 | 31 | −206 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 32 | −206 | 2 | 1 | 2 | 4 | 0 | 3 | 3 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 6 | 33 | −206 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 6 | 34 | −206 | 2 | 0 | 2 | 1 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 6 | 6 | 35 | −207 | 2 | 0 | 1 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 6 | 36 | −207 | 1 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 37 | −207 | 2 | 0 | 3 | 7 | 1 | 116 | 38 | 0 | 0 | 1 | 1 | 0 | 0 | 5 | 0 | 1 | 1 | 1 |
| 6 | 6 | 38 | 103 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 6 | 39 | −104 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 6 | 6 | 40 | 104 | 2 | 0 | 2 | 4 | 0 | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 6 | 41 | 104 | 2 | 0 | 1 | 4 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 6 | 42 | 104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 43 | −104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 6 | 6 | 44 | 104 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |

Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 6 | 45 | −205 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 46 | −206 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 47 | −206 | 1 | 0 | 3 | 4 | 4 | 39 | 45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 6 | 48 | −405 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 49 | −405 | 2 | 0 | 1 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 6 | 6 | 50 | −306 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 51 | −305 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 52 | −305 | 2 | 0 | 1 | 4 | 0 | 5 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 53 | −307 | 2 | 0 | 2 | 4 | 1 | 5 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 6 | 54 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 6 | 55 | −307 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 56 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 57 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 58 | −405 | 2 | 0 | 3 | 7 | 0 | 36 | 13 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 6 | 6 | 59 | −405 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 6 | 60 | −506 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 6 | 61 | −606 | 3 | 0 | 3 | 7 | 2 | 36 | 2 | 0 | 3 | 5 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 6 | 6 | 62 | −606 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 6 | 63 | −305 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 6 | 7 | 1 | 206 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 2 | 105 | 2 | 0 | 2 | 4 | 0 | 8 | 3 | 3 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 6 | 7 | 3 | 107 | 2 | 0 | 2 | 7 | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 |
| 6 | 7 | 4 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 5 | −105 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 6 | 106 | 2 | 0 | 2 | 7 | 0 | 6 | 5 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 6 | 7 | 7 | −106 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 7 | 8 | −106 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 9 | −205 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 10 | 208 | 2 | 0 | 1 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 7 | 11 | −205 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 7 | 12 | −206 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 7 | 13 | −207 | 2 | 0 | 2 | 7 | 0 | 3 | 2 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 7 | 14 | −207 | 2 | 0 | 2 | 6 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 1 |
| 6 | 7 | 15 | −207 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 16 | −207 | 2 | 0 | 3 | 7 | 1 | 127 | 38 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 6 | 7 | 17 | −207 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 18 | 104 | 2 | 0 | 2 | 4 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 7 | 19 | 104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 6 | 7 | 20 | 104 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 7 | 21 | −304 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 22 | −206 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 23 | −206 | 1 | 0 | 1 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 24 | −304 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 7 | 25 | −304 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 7 | 26 | −305 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 6 | 7 | 27 | −305 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 28 | −305 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 29 | −405 | 1 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 30 | −405 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 31 | −405 | 2 | 0 | 1 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | ? | 0 | 0 | 0 |
| 6 | 7 | 32 | −306 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 33 | −305 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 34 | −305 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 7 | 35 | −307 | 2 | 0 | 2 | 4 | 1 | 5 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 7 | 36 | −307 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 37 | −409 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 38 | −405 | 2 | 0 | 2 | 4 | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 7 | 39 | −405 | 2 | 0 | 3 | 7 | 0 | 38 | 13 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 1 |
| 6 | 7 | 40 | −405 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 41 | −405 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 42 | −605 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 43 | −605 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 44 | −606 | 3 | 0 | 3 | 7 | 2 | 36 | 2 | 0 | 3 | 5 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| 6 | 7 | 45 | −606 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 7 | 46 | −606 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 1 | 305 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 2 | 305 | 2 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 3 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 4 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 5 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 6 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 7 | 307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 8 | 105 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

## Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 8 | 9 | 206 | 2 | 0 | 1 | 4 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 10 | 206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 11 | 105 | 2 | 0 | 2 | 4 | 0 | 4 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 6 | 8 | 12 | 105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 13 | 106 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| 6 | 8 | 14 | 107 | 2 | 0 | 2 | 7 | 0 | 6 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 6 | 8 | 15 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 16 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 17 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 18 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 19 | −105 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 20 | −105 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 21 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 22 | −106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 23 | −106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 24 | −106 | 2 | 0 | 3 | 7 | 0 | 126 | 10 | 1 | 11 | 11 | 1 | 3 | 1 | 1 | 0 | 1 | 1 | 1 |
| 6 | 8 | 25 | 106 | 2 | 0 | 2 | 7 | 0 | 6 | 5 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 6 | 8 | 26 | 106 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 27 | −106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 28 | −105 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 29 | −106 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 30 | −106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 31 | −106 | 2 | 0 | 2 | 6 | 1 | 27 | 3 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 8 | 32 | −205 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 33 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 34 | 208 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 8 | 35 | 208 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 36 | 108 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 37 | 109 | 2 | 1 | 3 | 7 | 3 | 20 | 13 | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 8 | 38 | −107 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 39 | −107 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 40 | 108 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 41 | −108 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 8 | 42 | −108 | 2 | 0 | 2 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 43 | −108 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 44 | −108 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 45 | −107 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 46 | −107 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 47 | −205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 48 | −206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 49 | −206 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 50 | −206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 51 | −206 | 2 | 1 | 1 | 4 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 8 | 52 | −207 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 53 | −207 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 8 | 54 | −207 | 1 | 0 | 1 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 55 | −208 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 8 | 56 | −208 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 6 | 8 | 57 | −206 | 2 | 0 | 2 | 7 | 0 | 10 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 6 | 8 | 58 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 59 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 60 | −306 | 2 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 61 | −306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 62 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 63 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 64 | −206 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 65 | −206 | 2 | 0 | 1 | 7 | 0 | 3 | 4 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 8 | 66 | −207 | 2 | 0 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 67 | −207 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 68 | −207 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 69 | −207 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 70 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 71 | −207 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 8 | 72 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 73 | −307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 8 | 74 | −207 | 2 | 0 | 3 | 7 | 1 | 118 | 37 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 6 | 8 | 75 | −207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 8 | 76 | −207 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 77 | −207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 78 | −207 | 2 | 0 | 2 | 6 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 79 | −207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 80 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 81 | −307 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 8 | 82 | −306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 83 | −306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 8 | 84 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 85 | −307 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 86 | −306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 87 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 88 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 89 | −308 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 90 | −308 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 91 | −209 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 |
| 6 | 8 | 92 | −107 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 93 | −307 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 94 | −307 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 95 | −103 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 96 | −104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 97 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 98 | −103 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 6 | 8 | 99 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 100 | −103 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 101 | −104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 102 | −104 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 103 | −104 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 104 | −104 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 105 | −104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 106 | −104 | 2 | 0 | 1 | 6 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 107 | −203 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| 6 | 8 | 108 | 104 | 2 | 0 | 2 | 4 | 0 | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 8 | 109 | −204 | 1 | 0 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 6 | 8 | 110 | −204 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 111 | −204 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 112 | −205 | 2 | 0 | 1 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 3 | 0 | 0 | 1 |
| 6 | 8 | 113 | −206 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 114 | −305 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 6 | 8 | 115 | −305 | 2 | 0 | 2 | 6 | 0 | 15 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 8 | 116 | −306 | 2 | 0 | 3 | 4 | 2 | 33 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 6 | 8 | 117 | −305 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 118 | −305 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 119 | −305 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 120 | −306 | 2 | 0 | 1 | 1 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 8 | 121 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 8 | 122 | −307 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 123 | −307 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 8 | 124 | −307 | 2 | 0 | 2 | 4 | 1 | 5 | 0 | 0 | 6 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 8 | 125 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 126 | −409 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 127 | −409 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 8 | 128 | −405 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 129 | −405 | 2 | 0 | 2 | 4 | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 8 | 130 | −405 | 2 | 0 | 3 | 7 | 0 | 38 | 13 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 1 | 1 |
| 6 | 8 | 131 | −605 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 132 | −606 | 3 | 0 | 3 | 7 | 2 | 36 | 2 | 0 | 3 | 5 | 1 | 1 | 1 | 1 | 2 | 1 | 1 | 1 |
| 6 | 8 | 133 | −606 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 8 | 134 | −408 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 8 | 135 | −409 | 2 | 0 | 3 | 7 | 1 | 51 | 9 | 0 | 0 | 1 | 0 | 3 | 1 | 1 | 1 | 0 | 1 | 1 |
| 6 | 10 | 1 | 107 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 2 | 106 | 2 | 0 | 2 | 7 | 0 | 18 | 4 | 0 | 9 | 0 | 2 | 7 | 0 | 1 | 0 | 1 | 1 | 1 |
| 6 | 10 | 3 | 107 | 2 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 10 | 4 | −105 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 5 | −105 | 1 | 0 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 6 | −106 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 7 | −106 | 2 | 0 | 2 | 6 | 0 | 21 | 5 | 1 | 4 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| 6 | 10 | 8 | −106 | 2 | 0 | 3 | 6 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 9 | −106 | 1 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 10 | 10 | −206 | 2 | 0 | 2 | 7 | 0 | 9 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 6 | 10 | 11 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 12 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 13 | −207 | 2 | 0 | 2 | 7 | 0 | 3 | 3 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 10 | 14 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 15 | −207 | 2 | 0 | 3 | 7 | 0 | 42 | 24 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 6 | 10 | 16 | −208 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 10 | 17 | −208 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 18 | −208 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 19 | −208 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |

## Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 10 | 20 | −208 | 1 | 0 | 0 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 21 | −209 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 22 | −209 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 23 | −308 | 1 | 0 | 2 | 7 | 0 | 13 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 10 | 24 | −209 | 1 | 0 | 2 | 1 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 6 | 10 | 25 | −309 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 6 | 10 | 26 | −209 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 10 | 27 | −309 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 28 | −309 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 29 | −106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 30 | 103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 31 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 32 | −103 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 10 | 33 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 34 | −103 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 10 | 35 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 36 | −103 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 37 | −104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 38 | −103 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 10 | 39 | −104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 10 | 40 | −104 | 1 | 1 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 41 | −104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 42 | 104 | 2 | 0 | 2 | 4 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 10 | 43 | −104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 10 | 44 | −104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 45 | −204 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 46 | −205 | 2 | 1 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 47 | −304 | 2 | 1 | 3 | 7 | 0 | 21 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 10 | 48 | −307 | 1 | 0 | 1 | 4 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 10 | 49 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 10 | 50 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 10 | 51 | −405 | 1 | 0 | 3 | 7 | 0 | 8 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 10 | 52 | −606 | 2 | 0 | 1 | 6 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 1 | 1 |
| 6 | 11 | 1 | 305 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 2 | 306 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 3 | 305 | 2 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 4 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 5 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 6 | 305 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 7 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 8 | 205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 9 | 305 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 10 | 305 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 11 | 305 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 12 | 306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 6 | 11 | 13 | 306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 14 | 306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 11 | 15 | 306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 16 | 307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 17 | 307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 18 | 307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 19 | 306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 20 | 306 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 21 | 306 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 22 | 307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 23 | 207 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 24 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 25 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 26 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 27 | 207 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 28 | 206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 29 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 30 | 307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 31 | 307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 32 | 307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 33 | 307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 34 | 307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 35 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 36 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 37 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 38 | 205 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 39 | 205 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 40 | 205 | 2 | 1 | 2 | 4 | 0 | 7 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 41 | 105 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 42 | 205 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 43 | 205 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 44 | 206 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 45 | 206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 46 | 206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 47 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 48 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 49 | 207 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 50 | 206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 6 | 11 | 51 | 206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 52 | 206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 53 | 206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 54 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 55 | 206 | 2 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 56 | 206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 57 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 11 | 58 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 59 | 105 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 11 | 60 | 105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 61 | 105 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 62 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 63 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 64 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 65 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 66 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 67 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 68 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 69 | 106 | 2 | 0 | 2 | 7 | 0 | 23 | 6 | 0 | 11 | 0 | 3 | 10 | 0 | 1 | 0 | 1 | 1 | 1 |
| 6 | 11 | 70 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 71 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 72 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 73 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 74 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 75 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 76 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 77 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 78 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 79 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 80 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 81 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 82 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 83 | 106 | 2 | 0 | 1 | 2 | 0 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 84 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 85 | −105 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 86 | −105 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 87 | −105 | 1 | 0 | 1 | 6 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 88 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 89 | −105 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 90 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 11 | 91 | 106 | 2 | 1 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 92 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 93 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 94 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 95 | −106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 96 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 97 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 98 | 106 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 11 | 99 | 106 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 100 | 106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 101 | 106 | 2 | 0 | 2 | 7 | 0 | 6 | 5 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| 6 | 11 | 102 | −106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 103 | 106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 104 | 106 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 105 | 107 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 106 | 107 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 107 | −106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 108 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 109 | −105 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 110 | −106 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 111 | −106 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 112 | −106 | 1 | 0 | 2 | 6 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 113 | −105 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 114 | −105 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 115 | −106 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 116 | −106 | 2 | 0 | 2 | 6 | 0 | 8 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 11 | 117 | −106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 118 | −106 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 119 | −107 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 120 | −107 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 121 | −205 | 2 | 0 | 1 | 4 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 122 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 123 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 124 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 125 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 126 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 127 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 128 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 129 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 130 | 207 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 131 | 207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 132 | 208 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 133 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 134 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 135 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 136 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 137 | 208 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 138 | 208 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 139 | 208 | 2 | 0 | 1 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 140 | 209 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 141 | 209 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 142 | 209 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 143 | 209 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 144 | 209 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 145 | 208 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 146 | 107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 147 | −107 | 2 | 0 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 148 | −107 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 149 | −107 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 150 | 108 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 151 | −108 | 2 | 0 | 2 | 4 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 152 | −108 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 153 | −108 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 154 | −107 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 155 | −107 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 156 | −207 | 1 | 0 | 1 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 157 | −205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 158 | −205 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 159 | −205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 160 | −205 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 161 | −205 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 162 | −205 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 163 | −206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 164 | −206 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 165 | −206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 166 | −207 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 167 | −207 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 11 | 168 | −207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 169 | −207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 11 | 170 | −207 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 171 | −207 | 2 | 1 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 172 | −207 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 173 | −208 | 1 | 1 | 1 | 6 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 11 | 174 | −208 | 2 | 1 | 2 | 6 | 0 | 12 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 6 | 11 | 175 | −208 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 6 | 11 | 176 | −306 | 2 | 0 | 3 | 4 | 11 | 164 | 103 | 3 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 1 |
| 6 | 11 | 177 | −306 | 2 | 1 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 178 | −206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 179 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 180 | −206 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 11 | 181 | −206 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 182 | −207 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 183 | −206 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 184 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 185 | −206 | 2 | 0 | 2 | 6 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 |
| 6 | 11 | 186 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 187 | −206 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 188 | −207 | 2 | 0 | 2 | 7 | 0 | 3 | 3 | 0 | 3 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 11 | 189 | −207 | 2 | 0 | 3 | 7 | 1 | 135 | 44 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 6 | 11 | 190 | −307 | 2 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 191 | −207 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 192 | −207 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 193 | −207 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 6 | 11 | 194 | −207 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 195 | −207 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 196 | −207 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 197 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 198 | −207 | 2 | 0 | 2 | 6 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 199 | −306 | 2 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 200 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 201 | −307 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 202 | −307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 203 | −307 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 204 | −208 | 2 | 1 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 205 | −208 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 11 | 206 | −208 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 207 | −208 | 2 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 208 | −208 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 209 | −208 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 210 | −208 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 211 | −208 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 212 | −208 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 213 | −308 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 214 | −308 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 215 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 216 | −308 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 217 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 218 | −209 | 2 | 0 | 3 | 7 | 0 | 27 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 6 | 11 | 219 | −309 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 220 | −307 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 221 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 222 | 103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 223 | 103 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 224 | 103 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 225 | 104 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 226 | 103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 227 | 103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 228 | 103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 229 | −103 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 230 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 231 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 232 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 233 | −103 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 234 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 235 | −103 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 11 | 236 | −103 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 237 | −104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 238 | −103 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 239 | −104 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 240 | −104 | 2 | 0 | 1 | 5 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 241 | −103 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 242 | −103 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 243 | −104 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| 6 | 11 | 244 | −104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 245 | 104 | 2 | 0 | 2 | 4 | 0 | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 11 | 246 | 104 | 2 | 0 | 1 | 4 | 1 | 3 | 4 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 6 | 11 | 247 | 104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 248 | 104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 249 | 104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 250 | −104 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | ? | 0 | 0 | 1 |
| 6 | 11 | 251 | 104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 252 | 104 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 253 | −104 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 254 | −104 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 255 | −104 | 2 | 1 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 256 | −104 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 257 | −204 | 1 | 0 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| 6 | 11 | 258 | −204 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 259 | −204 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 260 | −204 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 261 | −204 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 262 | −204 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 6 | 11 | 263 | −204 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 264 | −304 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 265 | −304 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 266 | −304 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 267 | −205 | 2 | 0 | 2 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 |
| 6 | 11 | 268 | −205 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 269 | −205 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 270 | −205 | 2 | 1 | 2 | 7 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 271 | −205 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 272 | −205 | 2 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 273 | −206 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 274 | −206 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 275 | −304 | 2 | 1 | 1 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 276 | −304 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 277 | −304 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 278 | −305 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 279 | −305 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 280 | −305 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 281 | −305 | 1 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 282 | −305 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 283 | −305 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 284 | −305 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 285 | −305 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 286 | −305 | 2 | 1 | 1 | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 287 | −305 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 288 | −305 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 |
| 6 | 11 | 289 | −305 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 290 | −305 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 291 | −305 | 1 | 0 | 2 | 6 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 292 | −305 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 293 | −305 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 294 | −405 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 295 | −405 | 2 | 0 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | ? | 0 | 0 | 0 |
| 6 | 11 | 296 | −305 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 297 | −305 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 298 | −306 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 299 | −306 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 300 | −306 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 301 | −307 | 2 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 302 | −307 | 2 | 0 | 1 | 4 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 11 | 303 | −307 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 304 | −307 | 1 | 0 | 2 | 7 | 1 | 16 | 4 | 0 | 7 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 11 | 305 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 6 | 11 | 306 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 307 | −307 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 308 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 309 | −307 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 310 | −307 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 311 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 312 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 313 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 314 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 315 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 316 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 317 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 318 | −308 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 319 | −408 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 320 | −408 | 1 | 1 | 2 | 1 | 0 | 6 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 |
| 6 | 11 | 321 | −309 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 322 | −309 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 323 | −309 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 324 | −308 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 325 | −309 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 326 | −309 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 327 | −409 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 328 | −405 | 2 | 1 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 329 | −405 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 330 | −405 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 331 | −405 | 2 | 0 | 2 | 4 | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 6 | 11 | 332 | −406 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Appendix II.B: *Continued.*

| Ar | Ph | Site | Grid | SD | SC | OD | OCl | OP | OB | OF | OCr | Mn | Mt | C | GS | CB | CF | CC | QF | S | MA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 333 | −405 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 334 | −405 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 335 | −405 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 336 | −405 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 337 | −405 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 338 | −505 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 339 | −505 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 340 | −505 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 341 | −505 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 342 | −406 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 343 | −406 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 344 | −505 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 345 | −605 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 346 | −605 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 347 | −605 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 348 | −505 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 |
| 6 | 11 | 349 | −506 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 6 | 11 | 350 | −606 | 2 | 0 | 3 | 7 | 2 | 34 | 2 | 0 | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 0 | 1 | 1 |
| 6 | 11 | 351 | −606 | 1 | 1 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 352 | −606 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 353 | −507 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 354 | −408 | 1 | 1 | 3 | 4 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 355 | −408 | 1 | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 356 | −408 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 357 | −408 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 358 | −408 | 1 | 1 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 359 | −408 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 360 | −507 | 1 | 1 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 361 | −409 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 11 | 362 | −409 | 1 | 0 | 2 | 6 | 0 | 7 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 |

## Appendix II.C: Environmental Data

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 2 | 1 | 105 | 43 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 2 | 2 | 104 | 44 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.02 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 2 | 3 | −405 | 60 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 4 | 1 | 105 | 42.9 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 4 | 2 | 106 | 43.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.33 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 4 | 3 | 104 | 44.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 4 | 4 | 104 | 44.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 1 | 306 | 35.7 | 1500 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 1 | 0.02 | 2 | 3.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 2 | 105 | 42.8 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 3 | −105 | 46.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 4 | 106 | 43.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.33 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 5 | 106 | 43.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 6 | −106 | 45.8 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 5 | 7 | −205 | 49.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 8 | −206 | 50.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.13 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
| 6 | 5 | 9 | −206 | 51.6 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 5 | 1 | 0 | 0.15 | 2 | 1.5 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 10 | −307 | 53.6 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 6 | 5 | 11 | −207 | 53.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.38 | 0 | 98 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 |
| 6 | 5 | 12 | 104 | 44.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 13 | 104 | 44.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 14 | −205 | 51.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 5 | 0 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 15 | −206 | 52.1 | 1400 | 3 | 2 | 0 | 2 | 1 | 1 | 2 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 16 | −305 | 56.1 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.13 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 17 | −306 | 53.7 | 1400 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.05 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 18 | −307 | 55.6 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 19 | −307 | 55.0 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.33 | 1 | 3.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 20 | −405 | 59.8 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 5 | 21 | −606 | 65.5 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.25 | 0 | 98 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 2 |
| 6 | 6 | 1 | 305 | 37.5 | 1550 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 2 | 306 | 35.3 | 1500 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 1 | 0.02 | 2 | 3.0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 3 | 205 | 40.8 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 4 | 105 | 42.9 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 5 | 106 | 42.4 | 1600 | 4 | 2 | 0 | 2 | 1 | 0 | 3 | 2 | 0 | 0.20 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 6 | 106 | 43.8 | 1500 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 7 | −105 | 47.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 8 | −105 | 48.8 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 9 | −105 | 46.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 2 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 10 | 106 | 44.7 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 11 | −106 | 45.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 0 | 0 | 0.05 | 1 | 98 | 6 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 12 | 106 | 45.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 13 | 106 | 44.3 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.04 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 14 | 106 | 44.1 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.15 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 15 | 106 | 44.5 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.10 | 1 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 6 | 16 | 106 | 44.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 6 | 17 | −106 | 45.7 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 6 | 18 | −106 | 46.2 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 19 | −106 | 46.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 20 | −105 | 49.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 21 | −105 | 47.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 22 | −105 | 49.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 23 | 208 | 41.2 | 1600 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.15 | 3 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 24 | 208 | 41.0 | 1600 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.00 | 1 | 98 | 5 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 25 | 209 | 41.5 | 1600 | 2 | 2 | 0 | 1 | 2 | 1 | 1 | 2 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 26 | 108 | 45.8 | 1650 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 27 | −108 | 46.2 | 1650 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.18 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 6 | 28 | 108 | 45.9 | 1650 | 4 | 3 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 29 | −205 | 50.4 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.00 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 6 | 30 | −206 | 50.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.08 | 1 | 1.5 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 31 | −206 | 51.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 32 | −206 | 51.7 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 5 | 2 | 0 | 0.24 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 33 | −206 | 51.8 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 5 | 1 | 0 | 0.15 | 2 | 1.5 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 34 | −206 | 52.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.25 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 35 | −207 | 53.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 36 | −207 | 53.3 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.45 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 6 | 37 | −207 | 53.6 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 1 |
| 6 | 6 | 38 | 103 | 44.7 | 1550 | 4 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.04 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 39 | −104 | 50.2 | 1450 | 3 | 2 | 0 | 2 | 3 | 2 | 3 | 0 | 0 | 0.05 | 0 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 |
| 6 | 6 | 40 | 104 | 44.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 41 | 104 | 44.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.02 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 42 | 104 | 44.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.18 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 6 | 43 | −104 | 46.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 44 | 104 | 45.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.05 | 0 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 5 |

Appendix II.C: *Continued.*

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 6 | 45 | −205 | 51.5 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 5 | 0 | 0 | 0.02 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 46 | −206 | 52.5 | 1400 | 3 | 1 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 6 | 47 | −206 | 53.3 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 48 | −405 | 58.2 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 49 | −405 | 58.7 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.20 | 0 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 50 | −306 | 54.3 | 1400 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.00 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 51 | −305 | 54.5 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.07 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 52 | −305 | 54.7 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 0 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 53 | −307 | 55.3 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.10 | 1 | 2.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 54 | −307 | 55.9 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 55 | −307 | 56.0 | 1500 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0.15 | 1 | 98 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 56 | −307 | 56.2 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.10 | 1 | 5.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 57 | −307 | 57.0 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.35 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 58 | −405 | 60.0 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 59 | −405 | 60.2 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 6 | 60 | −506 | 62.0 | 1500 | 4 | 3 | 0 | 2 | 1 | 0 | 5 | 3 | 0 | 0.20 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 6 | 6 | 61 | −606 | 65.7 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.06 | 0 | 98 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 2 |
| 6 | 6 | 62 | −606 | 66.2 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.04 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 1 |
| 6 | 6 | 63 | −305 | 56.3 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.08 | 0 | 98 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 1 | 206 | 40.2 | 1700 | 5 | 3 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 7 | 2 | 105 | 42.8 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 3 | 107 | 42.9 | 1600 | 4 | 2 | 1 | 2 | 1 | 0 | 3 | 2 | 0 | 0.40 | 3 | 98 | 7 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 4 | 106 | 43.7 | 1500 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 5 | −105 | 48.6 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 6 | 106 | 45.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.33 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 7 | −106 | 46.5 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.40 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 8 | −106 | 47.8 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 9 | −205 | 49.9 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 10 | 208 | 40.9 | 1600 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.00 | 1 | 98 | 5 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 11 | −205 | 50.2 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.00 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 7 | 12 | −206 | 50.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.13 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 13 | −207 | 52.7 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.10 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 14 | −207 | 53.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 15 | −207 | 53.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 7 | 16 | −207 | 53.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 1 |
| 6 | 7 | 17 | −207 | 52.8 | 1500 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 18 | 104 | 44.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 19 | 104 | 43.4 | 1550 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.08 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 7 | 20 | 104 | 43.1 | 1550 | 4 | 2 | 0 | 2 | 1 | 0 | 2 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 5 |
| 6 | 7 | 21 | −304 | 53.8 | 1500 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.10 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 22 | −206 | 52.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.25 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 7 | 23 | −206 | 52.9 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.06 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 2 | 4 | 0 | 0 |
| 6 | 7 | 24 | −304 | 55.0 | 1400 | 2 | 1 | 0 | 1 | 3 | 2 | 1 | 0 | 1 | 0.05 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 25 | −304 | 54.6 | 1400 | 2 | 2 | 0 | 1 | 2 | 2 | 3 | 1 | 1 | 0.03 | 0 | 98 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 26 | −305 | 55.9 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.08 | 0 | 98 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 27 | −305 | 57.2 | 1350 | 3 | 1 | 0 | 2 | 3 | 1 | 1 | 0 | 0 | 0.05 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 28 | −305 | 57.3 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 29 | −405 | 57.7 | 1350 | 3 | 3 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.05 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 30 | −405 | 58.0 | 1350 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0.08 | 0 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 7 | 31 | −405 | 58.2 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 32 | −306 | 53.9 | 1400 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 33 | −305 | 54.4 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 0 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 34 | −305 | 54.3 | 1400 | 3 | 2 | 0 | 2 | 3 | 2 | 1 | 3 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 35 | −307 | 55.0 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.05 | 1 | 3.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 36 | −307 | 54.5 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.28 | 1 | 3.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 37 | −409 | 58.8 | 1650 | 4 | 2 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 38 | −405 | 59.3 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 39 | −405 | 59.6 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 40 | −405 | 60.0 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.08 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 41 | −405 | 60.1 | 1350 | 3 | 2 | 0 | 2 | 3 | 1 | 3 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 42 | −605 | 66.5 | 1500 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 7 | 43 | −605 | 66.8 | 1550 | 4 | 2 | 0 | 2 | 3 | 0 | 3 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 7 | 44 | −606 | 65.6 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.06 | 0 | 98 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 |
| 6 | 7 | 45 | −606 | 66.5 | 1400 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 7 | 46 | −606 | 67.4 | 1450 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.04 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 1 | 305 | 34.1 | 1800 | 5 | 2 | 1 | 2 | 1 | 0 | 1 | 3 | 0 | 0.80 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 2 | 305 | 35.7 | 1600 | 4 | 2 | 1 | 2 | 2 | 0 | 2 | 2 | 0 | 0.35 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 3 | 205 | 37.8 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 4 | 205 | 37.6 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 5 | 205 | 39.1 | 1500 | 4 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.03 | 2 | 98 | 9 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 6 | 205 | 39.4 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 7 | 307 | 34.6 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 1 | 1.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 8 | 105 | 42.0 | 1600 | 5 | 3 | 1 | 2 | 1 | 0 | 1 | 3 | 0 | 0.35 | 3 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |

## Appendix II.C: *Continued.*

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 8 | 9 | 206 | 40.0 | 1700 | 5 | 3 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.02 | 2 | 98 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 10 | 206 | 40.2 | 1600 | 4 | 2 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 11 | 105 | 42.7 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 12 | 105 | 43.1 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 13 | 106 | 42.3 | 1600 | 4 | 2 | 0 | 2 | 1 | 0 | 3 | 2 | 0 | 0.20 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 14 | 107 | 42.9 | 1600 | 4 | 2 | 1 | 2 | 1 | 0 | 3 | 2 | 0 | 0.40 | 3 | 98 | 7 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 15 | 106 | 42.1 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.04 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 16 | 106 | 43.4 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 17 | 106 | 43.6 | 1500 | 2 | 1 | 0 | 1 | 5 | 2 | 4 | 0 | 0 | 0.08 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 18 | 106 | 43.9 | 1500 | 2 | 1 | 0 | 1 | 5 | 2 | 4 | 0 | 0 | 0.08 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 19 | −105 | 48.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | 0.00 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 2 |
| 6 | 8 | 20 | −105 | 49.0 | 1450 | 3 | 3 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.04 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 21 | −105 | 48.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.04 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 22 | −106 | 45.3 | 1450 | 3 | 3 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 23 | −106 | 45.5 | 1450 | 2 | 2 | 0 | 1 | 3 | 2 | 4 | 0 | 0 | 0.00 | 1 | 98 | 6 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 24 | −106 | 47.5 | 1500 | 3 | 3 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.00 | 1 | 98 | 4 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 2 |
| 6 | 8 | 25 | 106 | 45.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.33 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 26 | 106 | 44.6 | 1500 | 2 | 2 | 0 | 1 | 3 | 2 | 3 | 3 | 0 | 0.01 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 27 | −106 | 45.8 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 8 | 28 | −105 | 47.4 | 1450 | 2 | 1 | 0 | 1 | 3 | 2 | 3 | 0 | 0 | 0.00 | 1 | 1.5 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 29 | −106 | 47.2 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 30 | −106 | 48.9 | 1450 | 3 | 3 | 0 | 2 | 2 | 2 | 1 | 2 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 31 | −106 | 48.7 | 1450 | 3 | 3 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 32 | −205 | 49.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 33 | −105 | 49.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 34 | 208 | 40.1 | 1600 | 4 | 3 | 1 | 2 | 1 | 0 | 2 | 2 | 0 | 0.63 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 4 | 4 | 0 | 0 |
| 6 | 8 | 35 | 208 | 40.7 | 1550 | 3 | 1 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 8 | 36 | 108 | 43.3 | 1800 | 5 | 2 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 0.20 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 7 |
| 6 | 8 | 37 | 109 | 45.3 | 2300 | 6 | 3 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 0 |
| 6 | 8 | 38 | −107 | 45.9 | 1800 | 5 | 3 | 1 | 2 | 2 | 0 | 0 | 1 | 0 | 0.50 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 |
| 6 | 8 | 39 | −107 | 46.1 | 1750 | 5 | 1 | 1 | 2 | 2 | 0 | 0 | 2 | 0 | 0.50 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 8 | 40 | 108 | 45.6 | 1650 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 41 | −108 | 45.9 | 1650 | 3 | 3 | 0 | 2 | 6 | 2 | 1 | 0 | 0 | 0.13 | 1 | 98 | 4 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 42 | −108 | 46.1 | 1650 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.01 | 1 | 98 | 4 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 43 | −108 | 46.5 | 1650 | 4 | 3 | 1 | 2 | 1 | 0 | 0 | 2 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 6 | 8 | 44 | −108 | 46.5 | 1800 | 6 | 3 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0.28 | 2 | 98 | 0 | 0 | 0 | 2 | 0 | 5 | 0 | 0 | 1 |
| 6 | 8 | 45 | −107 | 49.4 | 1600 | 4 | 2 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 46 | −107 | 49.0 | 1800 | 5 | 3 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.55 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6 | 8 | 47 | −205 | 50.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 48 | −206 | 50.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.15 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 8 | 49 | −206 | 50.8 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 50 | −206 | 49.7 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 3 | 1 | 0 | 0.18 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 51 | −206 | 50.8 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 52 | −207 | 51.3 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 53 | −207 | 51.4 | 1600 | 4 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 0 | 0.40 | 1 | 98 | 0 | 0 | 2 | 2 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 54 | −207 | 49.7 | 1700 | 5 | 3 | 1 | 2 | 1 | 0 | 1 | 3 | 0 | 0.15 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 0 | 0 |
| 6 | 8 | 55 | −208 | 51.6 | 1650 | 4 | 2 | 1 | 2 | 1 | 0 | 3 | 2 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 56 | −208 | 50.8 | 1700 | 5 | 2 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.40 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 57 | −206 | 51.8 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 2 | 0 | 0.13 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 58 | −206 | 52.2 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 59 | −206 | 52.3 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.16 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 60 | −306 | 53.6 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 2 | 1 | 0 | 0.07 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 61 | −306 | 53.2 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.08 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 62 | −206 | 51.1 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 5 | 1 | 0 | 0.25 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 63 | −206 | 52.4 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 4 | 3.5 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 64 | −206 | 51.7 | 1450 | 3 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.03 | 2 | 2.0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 8 | 65 | −206 | 52.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 66 | −207 | 51.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.35 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 67 | −207 | 52.7 | 1450 | 2 | 1 | 0 | 1 | 5 | 2 | 3 | 0 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 68 | −207 | 52.9 | 1450 | 2 | 1 | 0 | 1 | 5 | 2 | 3 | 0 | 0 | 0.01 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 69 | −207 | 52.8 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 70 | −307 | 53.5 | 1450 | 2 | 1 | 0 | 1 | 5 | 2 | 3 | 0 | 0 | 0.02 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 71 | −207 | 53.3 | 1450 | 2 | 1 | 0 | 1 | 5 | 2 | 3 | 0 | 0 | 0.00 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 72 | −307 | 53.5 | 1450 | 2 | 1 | 0 | 1 | 5 | 2 | 3 | 0 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 73 | −307 | 53.8 | 1450 | 2 | 1 | 0 | 1 | 5 | 2 | 3 | 0 | 0 | 0.05 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 74 | −207 | 51.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 1 |
| 6 | 8 | 75 | −207 | 52.9 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 76 | −207 | 52.7 | 1500 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 77 | −207 | 52.0 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 78 | −207 | 52.0 | 1550 | 4 | 2 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.30 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 79 | −207 | 53.1 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.08 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 80 | −307 | 53.8 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 1 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 81 | −307 | 53.7 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |

Appendix II.C: *Continued.*

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 8 | 82 | −306 | 53.7 | 1450 | 3 | 1 | 0 | 2 | 1 | 1 | 3 | 1 | 0 | 0.02 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 83 | −306 | 53.9 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 2 | 1 | 0 | 0.06 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 84 | −307 | 53.9 | 1450 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.08 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 7 | 4 | 0 | 0 |
| 6 | 8 | 85 | −307 | 53.9 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.18 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 86 | −306 | 55.6 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.04 | 1 | 0.3 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 87 | −308 | 54.1 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 88 | −308 | 54.6 | 1500 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 1 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 89 | −308 | 54.5 | 1500 | 2 | 2 | 0 | 1 | 4 | 2 | 4 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 90 | −308 | 54.7 | 1500 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.28 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 91 | −209 | 53.9 | 2100 | 5 | 3 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 0.80 | 2 | 98 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 92 | −107 | 46.7 | 1600 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.20 | 1 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 8 | 93 | −307 | 54.0 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 3 | 0 | 0 | 0.10 | 4 | 3.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 94 | −307 | 53.9 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 3 | 0 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 95 | −103 | 46.8 | 1550 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 5 |
| 6 | 8 | 96 | −104 | 47.2 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 97 | −103 | 48.4 | 1750 | 5 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.13 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 98 | −103 | 48.7 | 1700 | 5 | 4 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.13 | 2 | 98 | 7 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 8 | 99 | −103 | 48.5 | 1600 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.03 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 8 | 100 | −103 | 48.2 | 1500 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 101 | −104 | 47.4 | 1450 | 3 | 1 | 0 | 2 | 1 | 2 | 1 | 0 | 0 | 0.10 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 102 | −104 | 47.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.10 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 8 | 103 | −104 | 48.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.25 | 0 | 8.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 8 | 104 | −104 | 48.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 5 |
| 6 | 8 | 105 | −104 | 47.6 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 106 | −104 | 47.8 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 107 | −203 | 50.2 | 1450 | 3 | 2 | 0 | 2 | 3 | 2 | 3 | 0 | 0 | 0.15 | 0 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 |
| 6 | 8 | 108 | 104 | 43.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 109 | −204 | 50.1 | 1800 | 5 | 3 | 1 | 2 | 2 | 0 | 2 | 2 | 0 | 0.80 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 110 | −204 | 51.3 | 1650 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 8 | 111 | −204 | 51.1 | 1600 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 112 | −205 | 51.5 | 1450 | 4 | 2 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 113 | −206 | 51.1 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 114 | −305 | 55.9 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.18 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 115 | −305 | 56.4 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 0 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 116 | −306 | 53.8 | 1400 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.01 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 117 | −305 | 54.2 | 1400 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.08 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 118 | −305 | 54.4 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 0 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 119 | −305 | 54.3 | 1400 | 3 | 2 | 0 | 2 | 3 | 2 | 1 | 3 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 120 | −306 | 55.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.00 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 6 | 8 | 121 | −307 | 53.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.06 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 122 | −307 | 54.1 | 1450 | 2 | 2 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0.40 | 1 | 1.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 8 | 123 | −307 | 54.4 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.05 | 1 | 3.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 124 | −307 | 54.9 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.10 | 1 | 2.5 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 125 | −307 | 55.1 | 1500 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.15 | 1 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 8 | 126 | −409 | 58.7 | 1650 | 4 | 2 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 127 | −409 | 59.1 | 1700 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.03 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 128 | −405 | 59.5 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 8 | 129 | −405 | 59.3 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 130 | −405 | 59.6 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 8 | 131 | −605 | 66.8 | 1550 | 4 | 2 | 0 | 2 | 3 | 0 | 3 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 8 | 132 | −606 | 65.4 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.06 | 0 | 98 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 2 |
| 6 | 8 | 133 | −606 | 65.9 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.08 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 6 | 8 | 134 | −408 | 61.5 | 1800 | 5 | 1 | 1 | 2 | 2 | 0 | 2 | 1 | 0 | 0.35 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 5 |
| 6 | 8 | 135 | −409 | 60.4 | 1900 | 5 | 3 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 6 | 10 | 1 | 107 | 42.2 | 1600 | 4 | 2 | 0 | 2 | 1 | 0 | 3 | 2 | 0 | 0.20 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 2 | 106 | 42.7 | 1600 | 4 | 2 | 1 | 2 | 1 | 0 | 3 | 2 | 0 | 0.33 | 3 | 98 | 7 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 3 | 107 | 42.7 | 1600 | 4 | 2 | 0 | 2 | 1 | 0 | 3 | 2 | 0 | 0.00 | 3 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 4 | −105 | 47.0 | 1600 | 4 | 2 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 10 | 5 | −105 | 46.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 6 | −106 | 45.9 | 1450 | 2 | 2 | 0 | 2 | 3 | 1 | 3 | 3 | 1 | 0.00 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 7 | −106 | 46.8 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.35 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 8 | −106 | 48.0 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.50 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 10 | 9 | −106 | 48.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.30 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 10 | −206 | 51.8 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 2 | 0 | 0.13 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 11 | −206 | 52.2 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 12 | −206 | 52.2 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.16 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 13 | −207 | 52.6 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.06 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 14 | −206 | 52.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.25 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 15 | −207 | 53.1 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 16 | −208 | 52.6 | 1650 | 4 | 1 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 17 | −208 | 53.1 | 1600 | 3 | 2 | 1 | 2 | 2 | 0 | 3 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 18 | −208 | 53.3 | 1700 | 4 | 2 | 1 | 2 | 2 | 0 | 2 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 19 | −208 | 53.6 | 1700 | 4 | 2 | 1 | 2 | 2 | 0 | 2 | 1 | 0 | 0.40 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |

## Appendix II.C: *Continued.*

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 10 | 20 | −208 | 53.7 | 1650 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.01 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 1 |
| 6 | 10 | 21 | −209 | 53.5 | 1700 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.20 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 10 | 22 | −209 | 53.6 | 1800 | 4 | 2 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 0.30 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6 | 10 | 23 | −308 | 54.5 | 1650 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.01 | 1 | 98 | 4 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 10 | 24 | −209 | 54.0 | 2100 | 5 | 4 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 0.80 | 2 | 98 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 10 | 25 | −309 | 54.8 | 1800 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.20 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 1 |
| 6 | 10 | 26 | −209 | 53.2 | 2000 | 5 | 2 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.40 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 10 | 27 | −309 | 54.8 | 1700 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.05 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 10 | 28 | −309 | 54.7 | 1750 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.30 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 10 | 29 | −106 | 48.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 30 | 103 | 45.2 | 1600 | 4 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 10 | 31 | −103 | 47.1 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 3 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 32 | −103 | 47.6 | 1750 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.08 | 3 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 |
| 6 | 10 | 33 | −103 | 48.0 | 1700 | 4 | 3 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 10 | 34 | −103 | 47.9 | 1600 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 35 | −103 | 47.8 | 1550 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 8 | 0 |
| 6 | 10 | 36 | −103 | 49.0 | 1650 | 5 | 3 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 37 | −104 | 47.7 | 1450 | 3 | 1 | 0 | 2 | 3 | 2 | 3 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 10 | 38 | −103 | 48.0 | 1500 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 5 |
| 6 | 10 | 39 | −104 | 48.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.05 | 0 | 8 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 3 | 0 |
| 6 | 10 | 40 | −104 | 49.5 | 1500 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.18 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 6 | 10 | 41 | −104 | 49.6 | 1650 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.28 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 10 | 42 | 104 | 44.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 43 | −104 | 45.8 | 1600 | 5 | 2 | 1 | 2 | 2 | 0 | 1 | 0 | 0 | 0.33 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 10 | 44 | −104 | 46.1 | 1550 | 4 | 1 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.35 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 45 | −204 | 50.0 | 1800 | 5 | 3 | 1 | 2 | 2 | 0 | 2 | 2 | 0 | 0.80 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 10 | 46 | −205 | 53.0 | 1400 | 3 | 1 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 47 | −304 | 54.6 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.15 | 0 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 48 | −307 | 54.9 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.10 | 1 | 2.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 49 | −307 | 55.5 | 1500 | 3 | 3 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.08 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 50 | −308 | 54.8 | 1500 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 51 | −405 | 59.5 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 10 | 52 | −606 | 65.2 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.18 | 0 | 98 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 2 |
| 6 | 11 | 1 | 305 | 34.0 | 1800 | 5 | 2 | 1 | 2 | 1 | 0 | 1 | 3 | 0 | 0.80 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 2 | 306 | 34.1 | 1500 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 3 | 305 | 36.7 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 4 | 205 | 37.7 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 5 | 205 | 37.5 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 6 | 305 | 37.2 | 1550 | 2 | 1 | 0 | 1 | 3 | 2 | 3 | 0 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 7 | 205 | 39.0 | 1550 | 4 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 8 | 205 | 39.3 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 9 | 305 | 37.5 | 1550 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 10 | 305 | 34.7 | 1600 | 3 | 2 | 0 | 2 | 1 | 0 | 5 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 11 | 305 | 34.5 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 12 | 306 | 34.5 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 13 | 306 | 34.5 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 14 | 306 | 35.7 | 1550 | 3 | 1 | 0 | 2 | 2 | 2 | 3 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 15 | 306 | 36.5 | 1550 | 3 | 1 | 0 | 2 | 4 | 2 | 3 | 0 | 0 | 0.03 | 2 | 98 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 16 | 307 | 34.6 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 1 | 1.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 17 | 307 | 35.6 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.15 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 18 | 307 | 35.9 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 19 | 306 | 36.0 | 1500 | 3 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.50 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 20 | 306 | 35.9 | 1550 | 3 | 1 | 0 | 2 | 1 | 2 | 5 | 0 | 0 | 0.01 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 21 | 306 | 35.3 | 1500 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 1 | 0.00 | 2 | 3.0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 22 | 307 | 37.1 | 1500 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.15 | 1 | 98 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 |
| 6 | 11 | 23 | 207 | 37.6 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.03 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 24 | 207 | 38.1 | 1550 | 3 | 1 | 0 | 2 | 1 | 0 | 0 | 3 | 0 | 0.30 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 25 | 207 | 38.1 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 3 | 0 | 0.25 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 26 | 207 | 38.3 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 2 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 27 | 207 | 38.4 | 1550 | 3 | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 28 | 206 | 38.3 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 |
| 6 | 11 | 29 | 207 | 38.6 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 30 | 307 | 34.7 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.40 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 31 | 307 | 35.7 | 1500 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.30 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 32 | 307 | 36.1 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 4 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 33 | 307 | 36.3 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.02 | 4 | 0.0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 34 | 307 | 36.5 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.20 | 4 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 35 | 207 | 38.0 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 36 | 207 | 38.3 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 37 | 207 | 39.3 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 38 | 205 | 40.1 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 39 | 205 | 39.9 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 3 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 40 | 205 | 40.6 | 1450 | 2 | 1 | 0 | 1 | 3 | 2 | 3 | 0 | 0 | 0.00 | 1 | 3.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |

Appendix II.C: ***Continued.***

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 41 | 105 | 42.9 | 1550 | 4 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.12 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 42 | 205 | 40.5 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.08 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 43 | 205 | 40.1 | 1550 | 4 | 2 | 0 | 2 | 1 | 1 | 3 | 2 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 44 | 206 | 39.8 | 1650 | 5 | 3 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 45 | 206 | 39.7 | 1550 | 3 | 1 | 0 | 2 | 3 | 1 | 3 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 46 | 206 | 39.1 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 47 | 207 | 39.0 | 1550 | 3 | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.02 | 4 | 10.0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 48 | 207 | 39.5 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 3 | 0 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 49 | 207 | 39.9 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 3 | 1 | 0 | 0.55 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 50 | 206 | 40.1 | 1600 | 4 | 2 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 51 | 206 | 40.5 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 52 | 206 | 40.7 | 1550 | 3 | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 53 | 206 | 41.2 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 54 | 106 | 41.3 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 55 | 206 | 41.1 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.00 | 4 | 6.0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 56 | 206 | 41.0 | 1550 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.60 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 57 | 207 | 41.2 | 1550 | 2 | 1 | 0 | 1 | 4 | 1 | 3 | 0 | 0 | 0.00 | 2 | 6.0 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 58 | 106 | 42.3 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 59 | 105 | 42.7 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 60 | 105 | 43.2 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 61 | 105 | 43.5 | 1500 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 62 | 106 | 41.5 | 1550 | 3 | 2 | 0 | 2 | 2 | 2 | 3 | 0 | 0 | 0.06 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 63 | 106 | 42.1 | 1550 | 3 | 1 | 0 | 2 | 2 | 2 | 3 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 64 | 106 | 42.4 | 1500 | 3 | 1 | 0 | 2 | 2 | 2 | 3 | 0 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 65 | 106 | 42.7 | 1500 | 3 | 1 | 0 | 2 | 2 | 2 | 3 | 0 | 0 | 0.08 | 1 | 98 | 4 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 66 | 106 | 42.0 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.04 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 67 | 106 | 42.3 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 68 | 106 | 42.7 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 69 | 106 | 42.5 | 1600 | 4 | 2 | 1 | 2 | 1 | 0 | 3 | 2 | 0 | 0.00 | 3 | 98 | 7 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 70 | 107 | 41.7 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 71 | 107 | 41.8 | 1550 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 72 | 107 | 42.0 | 1550 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 73 | 107 | 42.0 | 1550 | 2 | 1 | 0 | 1 | 2 | 1 | 3 | 0 | 1 | 0.13 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 74 | 107 | 42.0 | 1550 | 2 | 1 | 0 | 1 | 2 | 1 | 3 | 0 | 1 | 0.20 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 75 | 107 | 42.5 | 1550 | 2 | 1 | 0 | 1 | 2 | 1 | 3 | 0 | 1 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 76 | 107 | 43.0 | 1550 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 77 | 107 | 43.4 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.01 | 1 | 5.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 78 | 107 | 43.7 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.02 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 79 | 107 | 43.9 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.23 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 80 | 107 | 43.9 | 1500 | 3 | 2 | 0 | 2 | 2 | 2 | 3 | 1 | 0 | 0.03 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 81 | 107 | 43.7 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 82 | 106 | 43.5 | 1550 | 3 | 2 | 0 | 2 | 1 | 1 | 3 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 83 | 106 | 43.8 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 1 | 3.5 | 4 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 84 | 106 | 43.5 | 1500 | 3 | 2 | 0 | 2 | 1 | 0 | 3 | 1 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 85 | −105 | 48.9 | 1500 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 86 | −105 | 49.1 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.04 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 87 | −105 | 46.8 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 88 | −105 | 48.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.04 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 89 | −105 | 48.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 2 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 90 | −105 | 46.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.08 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 91 | 106 | 44.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.25 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 92 | 106 | 44.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.03 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 93 | 106 | 44.3 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 94 | 106 | 44.5 | 1500 | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 2 | 0 | 0.20 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 95 | −106 | 45.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 0 | 0 | 0.05 | 2 | 98 | 6 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 96 | 106 | 44.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 97 | 106 | 45.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 98 | 106 | 44.0 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 99 | 106 | 44.1 | 1500 | 2 | 2 | 0 | 1 | 3 | 2 | 3 | 0 | 0 | 0.08 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 100 | 106 | 44.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.30 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 101 | 106 | 45.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.30 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 102 | −106 | 45.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 103 | 106 | 45.1 | 1450 | 3 | 2 | 0 | 2 | 4 | 2 | 4 | 0 | 0 | 0.01 | 1 | 98 | 3 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 104 | 106 | 44.5 | 1500 | 2 | 2 | 0 | 1 | 3 | 2 | 3 | 3 | 0 | 0.01 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 105 | 107 | 44.6 | 1500 | 2 | 1 | 0 | 1 | 3 | 2 | 3 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 106 | 107 | 44.5 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 107 | −106 | 45.3 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 108 | −105 | 47.3 | 1450 | 2 | 1 | 0 | 1 | 3 | 2 | 3 | 0 | 0 | 0.00 | 1 | 1.5 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 109 | −105 | 47.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.05 | 2 | 1.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 110 | −106 | 47.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 111 | −106 | 46.8 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 112 | −106 | 47.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 2 | 0 | 0.00 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 113 | −105 | 48.7 | 1450 | 2 | 2 | 0 | 1 | 3 | 1 | 3 | 0 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |

## Appendix II.C: *Continued.*

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 114 | −105 | 48.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 115 | −106 | 48.2 | 1450 | 3 | 3 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 116 | −106 | 48.5 | 1450 | 3 | 3 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 117 | −106 | 48.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.10 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 118 | −106 | 48.9 | 1450 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 119 | −107 | 48.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.15 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 120 | −107 | 48.3 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 121 | −205 | 49.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 122 | 207 | 40.2 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0.02 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 123 | 207 | 40.9 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.00 | 3 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 124 | 207 | 41.4 | 1550 | 3 | 2 | 0 | 2 | 3 | 2 | 5 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 125 | 207 | 41.2 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 126 | 207 | 41.5 | 1600 | 3 | 2 | 0 | 2 | 1 | 0 | 2 | 3 | 0 | 0.15 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 |
| 6 | 11 | 127 | 207 | 40.6 | 1600 | 4 | 2 | 0 | 2 | 1 | 0 | 2 | 2 | 0 | 0.25 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 128 | 207 | 40.7 | 1600 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 129 | 207 | 40.7 | 1600 | 4 | 2 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 130 | 207 | 41.1 | 1600 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.01 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 131 | 207 | 40.4 | 1600 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.10 | 3 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 132 | 208 | 40.1 | 1600 | 4 | 2 | 1 | 2 | 1 | 0 | 2 | 2 | 0 | 0.63 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 133 | 107 | 41.6 | 1550 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.15 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 134 | 107 | 43.5 | 1550 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.01 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 135 | 107 | 44.1 | 1600 | 4 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 136 | 107 | 44.0 | 1600 | 4 | 1 | 0 | 2 | 2 | 2 | 3 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 1 |
| 6 | 11 | 137 | 208 | 40.8 | 1600 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.06 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 138 | 208 | 41.0 | 1600 | 3 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 139 | 208 | 40.9 | 1600 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.00 | 1 | 98 | 5 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 140 | 209 | 41.4 | 1600 | 2 | 2 | 0 | 1 | 2 | 1 | 1 | 2 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 141 | 209 | 41.3 | 1600 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.02 | 1 | 98 | 4 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 142 | 209 | 41.9 | 1600 | 3 | 2 | 0 | 2 | 6 | 1 | 1 | 0 | 0 | 0.00 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 143 | 209 | 41.5 | 1600 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.02 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 144 | 209 | 41.7 | 1600 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.02 | 2 | 3.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 145 | 208 | 41.9 | 1650 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 146 | 107 | 44.3 | 1600 | 4 | 3 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 3 | 4 | 0 | 0 |
| 6 | 11 | 147 | −107 | 45.7 | 1800 | 5 | 3 | 1 | 2 | 2 | 0 | 0 | 1 | 0 | 0.50 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 |
| 6 | 11 | 148 | −107 | 46.0 | 1750 | 5 | 1 | 1 | 2 | 2 | 0 | 0 | 2 | 0 | 0.50 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 149 | −107 | 46.5 | 1600 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.20 | 1 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 150 | 108 | 45.5 | 1650 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 151 | −108 | 45.9 | 1650 | 3 | 3 | 0 | 2 | 6 | 2 | 1 | 0 | 0 | 0.00 | 1 | 98 | 4 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 152 | −108 | 46.4 | 1600 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.01 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 153 | −108 | 46.6 | 1700 | 4 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.00 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 154 | −107 | 48.0 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.05 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 155 | −107 | 49.2 | 1600 | 4 | 2 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 156 | −207 | 49.5 | 1700 | 5 | 3 | 1 | 2 | 1 | 0 | 1 | 3 | 0 | 0.15 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6 | 11 | 157 | −205 | 50.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 158 | −205 | 50.5 | 1400 | 3 | 2 | 0 | 2 | 1 | 2 | 1 | 1 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 159 | −205 | 49.9 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.01 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 160 | −205 | 49.7 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.18 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 161 | −205 | 49.9 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.00 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 162 | −205 | 50.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.02 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 163 | −206 | 50.7 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 164 | −206 | 50.6 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.05 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 165 | −206 | 49.8 | 1450 | 3 | 1 | 0 | 2 | 1 | 2 | 3 | 1 | 0 | 0.03 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 166 | −207 | 49.7 | 1450 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.08 | 1 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 167 | −207 | 49.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 168 | −207 | 50.5 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 169 | −207 | 50.1 | 1500 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 2 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 170 | −207 | 51.0 | 1500 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 171 | −207 | 50.7 | 1500 | 4 | 1 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0.08 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 172 | −207 | 51.3 | 1600 | 4 | 2 | 1 | 2 | 2 | 1 | 1 | 2 | 0 | 0.35 | 1 | 98 | 0 | 0 | 2 | 2 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 173 | −208 | 51.2 | 1700 | 5 | 4 | 1 | 2 | 1 | 0 | 3 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 5 | 4 | 0 | 0 |
| 6 | 11 | 174 | −208 | 51.2 | 1800 | 5 | 4 | 1 | 2 | 2 | 1 | 3 | 2 | 0 | 0.00 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 |
| 6 | 11 | 175 | −208 | 51.5 | 1650 | 4 | 2 | 1 | 2 | 1 | 0 | 3 | 2 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 176 | −306 | 53.2 | 1400 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.00 | 0 | 98 | 3 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 177 | −306 | 53.3 | 1400 | 3 | 2 | 0 | 2 | 1 | 1 | 2 | 1 | 0 | 0.33 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 178 | −206 | 52.1 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.13 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 179 | −206 | 51.0 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 5 | 1 | 0 | 0.25 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 180 | −206 | 51.3 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 5 | 1 | 0 | 0.18 | 2 | 1.5 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 181 | −206 | 51.5 | 1450 | 3 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.03 | 2 | 2.0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 182 | −207 | 51.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 183 | −206 | 52.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.16 | 4 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 184 | −206 | 52.3 | 1450 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 4 | 3.5 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 185 | −206 | 51.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.35 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 186 | −206 | 51.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.30 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |

Appendix II.C: ***Continued.***

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 187 | −206 | 52.5 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.08 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 188 | −207 | 52.4 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.06 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 189 | −207 | 53.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.00 | 2 | 98 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 1 |
| 6 | 11 | 190 | −307 | 53.6 | 1450 | 2 | 1 | 0 | 1 | 3 | 2 | 3 | 0 | 0 | 0.01 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 191 | −207 | 57.2 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.13 | 2 | 98 | 4 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 192 | −207 | 53.2 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 193 | −207 | 52.9 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 194 | −207 | 52.6 | 1500 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 195 | −207 | 52.7 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 5 | 0 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 196 | −207 | 52.9 | 1500 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 197 | −307 | 53.5 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 3 | 1 | 0 | 0.23 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 198 | −207 | 51.9 | 1550 | 4 | 2 | 1 | 2 | 1 | 0 | 1 | 2 | 0 | 0.30 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 199 | −306 | 53.8 | 1450 | 3 | 1 | 0 | 2 | 1 | 1 | 2 | 2 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 200 | −307 | 53.8 | 1450 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.08 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 7 | 4 | 0 | 0 |
| 6 | 11 | 201 | −307 | 53.7 | 1450 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 0.18 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 202 | −307 | 54.1 | 1450 | 3 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.28 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 203 | −307 | 55.2 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 204 | −208 | 51.5 | 1600 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 205 | −208 | 52.6 | 1650 | 4 | 2 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0.20 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 206 | −208 | 53.1 | 1600 | 3 | 2 | 1 | 2 | 2 | 0 | 3 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 207 | −208 | 52.9 | 1600 | 3 | 2 | 0 | 2 | 1 | 0 | 2 | 2 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 208 | −208 | 53.5 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 209 | −208 | 53.6 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.02 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 210 | −208 | 53.3 | 1600 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.03 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 211 | −208 | 53.3 | 1700 | 4 | 2 | 1 | 2 | 2 | 0 | 2 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 212 | −208 | 53.5 | 1700 | 4 | 2 | 1 | 2 | 2 | 0 | 2 | 1 | 0 | 0.40 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 213 | −308 | 54.4 | 1500 | 2 | 2 | 0 | 1 | 4 | 2 | 4 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 214 | −308 | 54.6 | 1500 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.28 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 215 | −308 | 54.8 | 1500 | 2 | 1 | 0 | 1 | 2 | 2 | 3 | 0 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 216 | −308 | 54.6 | 1550 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.45 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 217 | −308 | 55.1 | 1550 | 2 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 0.04 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 218 | −209 | 54.1 | 1800 | 4 | 3 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 0.01 | 1 | 98 | 4 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 1 |
| 6 | 11 | 219 | −309 | 55.4 | 1650 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0.35 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 220 | −307 | 53.6 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 3 | 0 | 0 | 0.20 | 0 | 98 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 221 | −307 | 53.8 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 3 | 0 | 0 | 0.08 | 0 | 3.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 222 | 103 | 44.7 | 1650 | 5 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 7 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 223 | 103 | 45.0 | 1650 | 5 | 2 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 224 | 103 | 44.5 | 1550 | 4 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.04 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 225 | 104 | 44.6 | 1450 | 3 | 3 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.03 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 226 | 103 | 45.8 | 1650 | 5 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.05 | 2 | 98 | 7 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 4 |
| 6 | 11 | 227 | 103 | 46.0 | 1650 | 5 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.05 | 2 | 98 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 228 | 103 | 46.2 | 1650 | 5 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.13 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 229 | −103 | 46.7 | 1600 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 230 | −103 | 47.3 | 1800 | 5 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.10 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 |
| 6 | 11 | 231 | −103 | 49.0 | 1850 | 6 | 2 | 1 | 2 | 1 | 0 | 1 | 3 | 0 | 0.50 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 4 |
| 6 | 11 | 232 | −103 | 49.4 | 1800 | 6 | 2 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 0.60 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 0 | 0 |
| 6 | 11 | 233 | −103 | 47.8 | 1600 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 234 | −103 | 48.4 | 1600 | 4 | 3 | 0 | 2 | 2 | 0 | 3 | 1 | 0 | 0.05 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 235 | −103 | 48.6 | 1700 | 5 | 4 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.13 | 2 | 98 | 7 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 236 | −103 | 48.9 | 1650 | 5 | 3 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 237 | −104 | 47.6 | 1450 | 3 | 1 | 0 | 2 | 3 | 2 | 3 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 238 | −103 | 47.9 | 1500 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 5 |
| 6 | 11 | 239 | −104 | 47.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.08 | 0 | 8.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 240 | −104 | 47.8 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.15 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 241 | −103 | 48.4 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 3 | 0 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 242 | −103 | 48.6 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 3 | 0 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 243 | −104 | 49.8 | 1450 | 3 | 2 | 0 | 2 | 3 | 2 | 3 | 0 | 0 | 0.05 | 0 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 |
| 6 | 11 | 244 | −104 | 49.5 | 1650 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.28 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 245 | 104 | 43.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 246 | 104 | 44.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.02 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 247 | 104 | 43.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.28 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 248 | 104 | 44.7 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.10 | 2 | 98 | 4 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 249 | 104 | 44.3 | 1450 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 250 | −104 | 45.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 251 | 104 | 44.9 | 1550 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 252 | 104 | 45.1 | 1550 | 4 | 2 | 0 | 2 | 1 | 0 | 2 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 5 |
| 6 | 11 | 253 | −104 | 46.1 | 1550 | 4 | 1 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.35 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 254 | −104 | 47.3 | 1550 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.30 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 1 |
| 6 | 11 | 255 | −104 | 47.9 | 1500 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 256 | −104 | 49.2 | 1650 | 4 | 3 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.20 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 5 |
| 6 | 11 | 257 | −204 | 50.0 | 1800 | 5 | 3 | 1 | 2 | 2 | 0 | 2 | 2 | 0 | 0.80 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 258 | −204 | 51.0 | 1750 | 5 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.60 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 259 | −204 | 51.0 | 1600 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |

## Appendix II.C: *Continued.*

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 260 | −204 | 52.3 | 2000 | 6 | 3 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 1 |
| 6 | 11 | 261 | −204 | 52.8 | 1850 | 5 | 2 | 0 | 2 | 4 | 0 | 4 | 1 | 0 | 0.20 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 262 | −204 | 53.0 | 1850 | 5 | 2 | 1 | 2 | 2 | 0 | 1 | 0 | 0 | 0.30 | 2 | 98 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 |
| 6 | 11 | 263 | −204 | 53.3 | 1850 | 5 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 264 | −304 | 53.7 | 1850 | 5 | 2 | 1 | 2 | 2 | 0 | 3 | 2 | 0 | 0.65 | 0 | 98 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 |
| 6 | 11 | 265 | −304 | 53.6 | 1500 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.10 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 266 | −304 | 53.6 | 1400 | 3 | 1 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.12 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 267 | −205 | 51.3 | 1450 | 4 | 2 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 0.20 | 1 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 268 | −205 | 52.2 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 269 | −205 | 52.6 | 1400 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.02 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 6 | 11 | 270 | −205 | 53.2 | 1400 | 3 | 1 | 0 | 2 | 2 | 2 | 1 | 1 | 0 | 0.02 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 271 | −205 | 52.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 272 | −205 | 51.3 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.35 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 273 | −206 | 52.0 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.25 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 274 | −206 | 51.7 | 1400 | 3 | 1 | 0 | 2 | 4 | 1 | 3 | 0 | 0 | 0.01 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 275 | −304 | 54.3 | 1450 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.03 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 276 | −304 | 54.1 | 1400 | 3 | 3 | 0 | 2 | 2 | 1 | 3 | 1 | 0 | 0.13 | 0 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 277 | −304 | 54.0 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.10 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 278 | −305 | 54.4 | 1400 | 3 | 1 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.25 | 0 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 279 | −305 | 54.1 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.18 | 0 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 280 | −305 | 54.3 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.15 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 281 | −305 | 54.0 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.17 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 5 |
| 6 | 11 | 282 | −305 | 54.3 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.08 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 283 | −305 | 54.3 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.24 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 284 | −305 | 54.9 | 1400 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 285 | −305 | 54.9 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 5 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 286 | −305 | 55.5 | 1450 | 4 | 3 | 0 | 2 | 1 | 0 | 5 | 3 | 0 | 0.08 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 287 | −305 | 55.7 | 1450 | 4 | 3 | 0 | 2 | 2 | 0 | 5 | 2 | 0 | 0.00 | 2 | 98 | 7 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 6 | 11 | 288 | −305 | 55.8 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 2 | 0 | 0.13 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 289 | −305 | 56.9 | 1450 | 4 | 3 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.15 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 290 | −305 | 56.8 | 1400 | 3 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.04 | 2 | 98 | 7 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 291 | −305 | 56.1 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.20 | 0 | 98 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 292 | −305 | 57.0 | 1350 | 3 | 1 | 0 | 2 | 3 | 1 | 1 | 0 | 0 | 0.05 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 293 | −305 | 57.1 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.03 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 294 | −405 | 57.8 | 1350 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 0.08 | 0 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 295 | −405 | 58.1 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.20 | 0 | 98 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 296 | −305 | 54.5 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.10 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 297 | −305 | 54.6 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.25 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 298 | −306 | 55.4 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.00 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 299 | −306 | 54.8 | 1450 | 2 | 2 | 0 | 1 | 2 | 1 | 2 | 0 | 0 | 0.03 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 300 | −306 | 55.1 | 1450 | 3 | 2 | 0 | 2 | 2 | 1 | 2 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 6 | 11 | 301 | −307 | 54.6 | 1450 | 3 | 3 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0.15 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 302 | −307 | 54.0 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 303 | −307 | 53.9 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.04 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 304 | −307 | 55.0 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.00 | 1 | 4.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 305 | −307 | 55.1 | 1450 | 2 | 2 | 0 | 1 | 2 | 1 | 1 | 1 | 0 | 0.15 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 306 | −307 | 55.0 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.00 | 1 | 1.5 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 307 | −307 | 55.6 | 1500 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.00 | 1 | 5.0 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 308 | −307 | 56.1 | 1500 | 2 | 1 | 0 | 1 | 2 | 2 | 3 | 0 | 0 | 0.00 | 2 | 4.5 | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 309 | −307 | 54.0 | 1450 | 2 | 2 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0.40 | 1 | 1.0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 310 | −307 | 54.7 | 1450 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.18 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 311 | −308 | 55.5 | 1500 | 2 | 1 | 0 | 1 | 2 | 1 | 2 | 0 | 0 | 0.30 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 312 | −308 | 56.0 | 1550 | 2 | 1 | 0 | 1 | 1 | 2 | 1 | 0 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 313 | −308 | 56.7 | 1500 | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 314 | −308 | 57.1 | 1550 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0.03 | 2 | 98 | 8 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 315 | −308 | 57.3 | 1550 | 3 | 2 | 0 | 2 | 1 | 1 | 1 | 0 | 0 | 0.08 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 316 | −308 | 57.5 | 1550 | 2 | 2 | 0 | 1 | 2 | 1 | 3 | 0 | 0 | 0.02 | 2 | 98 | 8 | 0 | 1 | 0 | 0 | 0 | 2 | 3 | 0 |
| 6 | 11 | 317 | −308 | 57.8 | 1550 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.00 | 2 | 98 | 8 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 318 | −308 | 57.8 | 1550 | 2 | 1 | 0 | 1 | 2 | 2 | 1 | 0 | 0 | 0.01 | 2 | 98 | 8 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 319 | −408 | 58.7 | 1800 | 5 | 2 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 0.50 | 3 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 320 | −408 | 59.0 | 1850 | 5 | 4 | 1 | 2 | 1 | 0 | 2 | 2 | 0 | 0.50 | 3 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 321 | −309 | 55.4 | 1800 | 4 | 3 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.85 | 3 | 98 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6 | 11 | 322 | −309 | 55.6 | 1950 | 5 | 4 | 1 | 2 | 2 | 0 | 2 | 3 | 0 | 1.30 | 3 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 |
| 6 | 11 | 323 | −309 | 58.1 | 1550 | 3 | 2 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 324 | −308 | 57.9 | 1550 | 3 | 1 | 0 | 2 | 2 | 0 | 1 | 0 | 0 | 0.06 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 5 | 0 |
| 6 | 11 | 325 | −309 | 57.7 | 1700 | 4 | 2 | 0 | 2 | 1 | 0 | 1 | 3 | 0 | 0.13 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 326 | −309 | 58.5 | 1700 | 4 | 2 | 0 | 2 | 1 | 0 | 2 | 2 | 0 | 0.06 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 327 | −409 | 58.9 | 1700 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 328 | −405 | 58.9 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 329 | −405 | 59.3 | 1500 | 4 | 3 | 0 | 2 | 2 | 0 | 2 | 2 | 0 | 0.35 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 330 | −405 | 59.3 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | 11 | 331 | −405 | 59.1 | 1350 | 3 | 1 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.18 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 332 | −406 | 58.7 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.20 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 4 |

Appendix II.C: *Continued.*

| Ar | Ph | Site | Grid | MA | Elev | Zn | Slp | HT | SCh | ST | SD | SCl | Er | Alv | $H_2O$ | WT | WD | Irr | Dng | Pl | Pot | Sci | Veg | Lnd | Crp | Spc |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 11 | 333 | −405 | 59.7 | 1550 | 5 | 3 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 2 | 6 | 0 | 0 |
| 6 | 11 | 334 | −405 | 59.9 | 1500 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 335 | −405 | 59.6 | 1350 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.18 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 336 | −405 | 59.7 | 1350 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 3 | 0 | 0.15 | 0 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 |
| 6 | 11 | 337 | −405 | 59.8 | 1350 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0.08 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 338 | −505 | 61.5 | 1400 | 4 | 2 | 1 | 2 | 2 | 0 | 2 | 1 | 0 | 0.10 | 1 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 339 | −505 | 62.4 | 1400 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 340 | −505 | 62.4 | 1400 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.25 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 1 |
| 6 | 11 | 341 | −505 | 62.8 | 1400 | 4 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.13 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 342 | −406 | 58.5 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 3 | 0 | 0.13 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 343 | −406 | 58.9 | 1450 | 3 | 2 | 0 | 2 | 2 | 0 | 2 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 344 | −505 | 64.0 | 1400 | 3 | 2 | 0 | 2 | 2 | 1 | 1 | 1 | 0 | 0.03 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 345 | −605 | 65.8 | 1500 | 4 | 2 | 0 | 2 | 3 | 0 | 3 | 1 | 0 | 0.20 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 7 | 4 | 0 | 0 |
| 6 | 11 | 346 | −605 | 66.4 | 1550 | 4 | 2 | 0 | 2 | 3 | 0 | 3 | 1 | 0 | 0.08 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 347 | −605 | 67.4 | 1500 | 4 | 2 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0.05 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 348 | −505 | 64.8 | 1400 | 2 | 3 | 0 | 1 | 2 | 1 | 1 | 1 | 0 | 0.13 | 0 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 6 | 11 | 349 | −506 | 64.7 | 1400 | 3 | 2 | 0 | 2 | 2 | 2 | 1 | 0 | 0 | 0.01 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 0 |
| 6 | 11 | 350 | −606 | 65.1 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.06 | 0 | 98 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 |
| 6 | 11 | 351 | −606 | 66.0 | 1400 | 3 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.05 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 352 | −606 | 66.4 | 1400 | 3 | 2 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 353 | −507 | 61.6 | 1750 | 5 | 1 | 1 | 2 | 2 | 0 | 2 | 1 | 0 | 0.28 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 |
| 6 | 11 | 354 | −408 | 60.1 | 1900 | 5 | 2 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 0.40 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 |
| 6 | 11 | 355 | −408 | 59.9 | 1850 | 5 | 3 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 0.40 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 1 |
| 6 | 11 | 356 | −408 | 59.9 | 1700 | 4 | 3 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.10 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 5 |
| 6 | 11 | 357 | −408 | 60.5 | 1800 | 5 | 2 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 1 |
| 6 | 11 | 358 | −408 | 60.4 | 1900 | 5 | 2 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.55 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 6 | 11 | 359 | −408 | 60.7 | 1800 | 5 | 1 | 1 | 2 | 2 | 0 | 2 | 0 | 0 | 0.15 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 360 | −507 | 62.6 | 1800 | 5 | 3 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.40 | 2 | 98 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 0 | 1 |
| 6 | 11 | 361 | −409 | 60.9 | 1750 | 5 | 2 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.35 | 2 | 98 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 |
| 6 | 11 | 362 | −409 | 60.3 | 1850 | 5 | 2 | 1 | 2 | 2 | 0 | 1 | 2 | 0 | 0.25 | 2 | 98 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |

## Appendix II.D: Special Artifacts and Resources

| Area | Phase | Site | Comments |
|---|---|---|---|
| 6 | 2 | 1 | 1 piece mica, 1 worked shell |
| 6 | 2 | 2 | 1 partial spindle whorl |
| 6 | 2 | 3 | 2 polished hoe fragments |
| 6 | 4 | 2 | 1 hammerstone, 1 white chert scraper, 1 worked shell |
| 6 | 4 | 3 | 1 bat face figurine |
| 6 | 4 | 4 | 1 partial spindle whorl |
| 6 | 5 | 2 | 3 obsidian chunks, 1 worked shell, mica |
| 6 | 5 | 3 | 1 sherd disc, 1 piece shell |
| 6 | 5 | 4 | 1 hammerstone, 1 chert scraper, 1 worked shell |
| 6 | 5 | 5 | worked quartz |
| 6 | 5 | 6 | 1 chert tool, bone |
| 6 | 5 | 8 | 1 quartz crystal, 1 indeterminate ground stone |
| 6 | 5 | 9 | 1 hammerstone, 1 bone, 1 worked shell |
| 6 | 5 | 10 | 1 piece shell |
| 6 | 5 | 11 | 1 bark beater, lots of fancy and unusual ceramics |
| 6 | 5 | 12 | 1 bat face figurine |
| 6 | 5 | 13 | partial spindle whorl |
| 6 | 5 | 15 | 1 basalt core and 2 flakes |
| 6 | 5 | 16 | unusual Suchilquitongo bowl |
| 6 | 5 | 18 | 1 complete figurine face |
| 6 | 5 | 19 | basalt flakes |
| 6 | 6 | 2 | lots of lithic debris |
| 6 | 6 | 4 | 1 worked shell, 1 piece mica |
| 6 | 6 | 5 | 20+ schist flakes, 1 piece shell, 1 quartz core |
| 6 | 6 | 7 | 1 green obsidian scraper, 1 hammerstone |
| 6 | 6 | 9 | 1 sherd disk, 2 figurine fragments, 1 kilnwaster, 1 piece shell |
| 6 | 6 | 12 | 1 green obsidian core, 1 hammerstone, 1 chert scraper, 1 worked shell, worked quartz |
| 6 | 6 | 24 | 6 sherd disks |
| 6 | 6 | 28 | 1 gray obsidian point, 1 hammerstone |
| 6 | 6 | 29 | large pieces mica |
| 6 | 6 | 30 | 1 indeterminate ground stone, 1 quartz crystal |
| 6 | 6 | 32 | several worked shell |
| 6 | 6 | 33 | 1 worked shell, 1 bone |
| 6 | 6 | 34 | 2 hammerstones, 1 chopper |
| 6 | 6 | 35 | 2 hammerstones |
| 6 | 6 | 37 | 1 hammerstone, 1 piece mica, 1 bark beater, 1 urn fragment, 2 clay beads, 1 spindle whorl, worked shell |
| 6 | 6 | 38 | 1 hammerstone, mica present |
| 6 | 6 | 39 | 1 battered ground stone, 2 quartzite blades |
| 6 | 6 | 40 | 1 bat figurine |
| 6 | 6 | 41 | partial spindle whorl, 1 gray obsidian point |
| 6 | 6 | 43 | 1 greenstone bead |
| 6 | 6 | 44 | lots of mica on and near site |
| 6 | 6 | 47 | 4 obsidian points and 1 scraper, basalt core and flakes |
| 6 | 6 | 53 | 1 gray obsidian point, 1 hammerstone, basalt flakes, bone, mica, 1 spindle whorl, 1 sherd disk, 11 pieces shell |
| 6 | 6 | 54 | 1 figurine fragment |
| 6 | 6 | 58 | 1 sherd disk, 2 polished hoe fragments, 1 black obsidian noseplug, 1 piece mica, 3 pieces shell (1 worked) |
| 6 | 6 | 61 | 1 figurine fragment, 1 ceramic animal effigy face, 4 sherd disks, 1 green and 1 gray obsidian point, 1 white chert scraper, 1 gray biface, and 2 white points, 1 small mano/abrader, 5 pieces shell, mica |
| 6 | 6 | 63 | 1 white chert core shell, unusual Suchilquitongo bowl |
| 6 | 7 | 2 | 1 worked shell, 1 piece mica, 3 obsidian cores |
| 6 | 7 | 3 | 1 kilnwaster, 2 pieces shell |
| 6 | 7 | 6 | 1 hammerstone, 1 worked shell, 1 green obsidian core, 1 white chert scraper |
| 6 | 7 | 7 | 1 bat face urn fragment, 1 gray obsidian core, 1 hammerstone |
| 6 | 7 | 11 | large pieces of mica |
| 6 | 7 | 12 | 1 indeterminate ground stone, 1 quartz crystal |
| 6 | 7 | 13 | 2 hammerstones, 1 quartz scraper, 1 figurine fragment |
| 6 | 7 | 14 | 2 hammerstone, 1 basalt flake |
| 6 | 7 | 16 | 100+ pieces shell, 3 ceramic beads, 1 spindle whorl, 7 urn and 8 figurine fragments, 1 hammerstone, 1 green obsidian point, 1 gray scraper, and 1 green drill |
| 6 | 7 | 18 | partial spindle whorl |
| 6 | 7 | 19 | lots of mica near site |
| 6 | 7 | 20 | mica |
| 6 | 7 | 26 | unusual cremas, shell |
| 6 | 7 | 34 | 1 urn fragment, 1 piece mica |
| 6 | 7 | 35 | 1 gray obsidian point, basalt flakes, 1 hammerstone, 1 piece mica, 10 unworked shell, 1 shell disk, 1 spindle whorl, bone, 1 ceramic animal effigy fragment |
| 6 | 7 | 38 | 1 hammerstone, 1 gray obsidian point |

Appendix II.D: *Continued.*

| Area | Phase | Site | Comments |
|---|---|---|---|
| 6 | 7 | 39 | fancy II cremas, 1 sherd disk, 2 pieces shell, 1 worked shell, 1 piece mica, 2 polished hoe fragments, lots of unworked chert, 1 black obsidian noseplug |
| 6 | 7 | 44 | fancy II ceramics, 3 figurine and 1 animal effigy fragments, 4 sherd disks, 6 pieces shell, mica, 1 green and 1 gray obsidian point, 2 white chert points, 1 white scraper, and 2 bifaces, 1 small mano/abrader |
| 6 | 8 | 2 | 1 sherd disk |
| 6 | 8 | 9 | 1 tubular bone bead |
| 6 | 8 | 11 | 1 worked shell, 1 piece mica |
| 6 | 8 | 13 | 1 piece shell |
| 6 | 8 | 14 | 1 kilnwaster, 2 pieces shell |
| 6 | 8 | 24 | 4 urn fragments, 2 spindle whorls, 4 sherd disks, 2 hammerstones, 1 basalt flake, 4 white chert points, 3 pieces shell, mica, 2 fired clay concretions, 1 gray obsidian disk |
| 6 | 8 | 25 | 1 green obsidian core, 1 hammerstone, 1 chert scraper, 1 worked shell |
| 6 | 8 | 27 | 1 chert tool, 1 bone |
| 6 | 8 | 31 | 3 spindle whorls, 2 sherd discs, 1 figurine and 4 urn fragments, 1 blaek obsidian point, 1 noseplug, and 1 gray scraper, 2 pieces shell |
| 6 | 8 | 34 | lots of oxidized orange ceramics, 2 urn fragments, quartz crystals |
| 6 | 8 | 36 | lots of quartz crystals |
| 6 | 8 | 37 | 3 gray obsidian points and 2 modified flakes, 1 unworked greenstone, 1 white quartz projectile point, 4 quartz scrapers, 6 quartz crystals |
| 6 | 8 | 44 | 2 urn fragments (1 rope, 1 feathers), 1 kilnwaster |
| 6 | 8 | 51 | 2 hammerstones, 1 quartz scraper |
| 6 | 8 | 54 | 1 piece greenstone |
| 6 | 8 | 55 | 1 large gray crystalline flake |
| 6 | 8 | 56 | 1 chalcedony point |
| 6 | 8 | 57 | 1 quartz scraper, 1 gray obsidian scraper |
| 6 | 8 | 65 | 1 urn fragment, 1 carved sherd, 1 figurine fragment, 2 hammerstones, 1 quartz scraper |
| 6 | 8 | 74 | 100s of pieces of shell, 2 kilnwasters, 3 clay beads, 1 urn fragment, 1 bark beater, 1 spindle whorl, 1 hammerstone, 1 green obsidian point, 1 green drill, and 1 gray scraper |
| 6 | 8 | 75 | 1 piece shell |
| 6 | 8 | 78 | many *sahumadores*, 1 clay coil, 1 greenstone pendant and 1 bead |
| 6 | 8 | 84 | 1 quartzite scraper |
| 6 | 8 | 91 | 2 urn fragments, 1 piece shell, 1 chert point |
| 6 | 8 | 95 | 1 hammerstone |
| 6 | 8 | 98 | 1 figurine fragment |
| 6 | 8 | 104 | 1 chert scraper |
| 6 | 8 | 106 | 1 urn fragment |
| 6 | 8 | 107 | 1 ground stone tool |
| 6 | 8 | 108 | 1 bat face figurine |
| 6 | 8 | 109 | 2 sherd disks |
| 6 | 8 | 112 | 3 urn fragments, 1 basalt hammerstone, 2 basalt flakes |
| 6 | 8 | 114 | 1 piece shell, 1 piece human bone |
| 6 | 8 | 115 | 1 urn fragment |
| 6 | 8 | 116 | 3 shell beads, 2 greenstone beads, 1 piece shell, mica, lots of obsidian |
| 6 | 8 | 119 | 1 urn fragment, mica |
| 6 | 8 | 121 | 3 unworked shell, 1 figurine fragment |
| 6 | 8 | 122 | 1 hammerstone |
| 6 | 8 | 123 | 1 sherd disk |
| 6 | 8 | 124 | basalt flakes, 1 hammerstone, 10 unworked shell, 1 shell disk, 1 sherd disk, 1 spindle whorl, 1 piece mica, bone |
| 6 | 8 | 127 | basalt flakes |
| 6 | 8 | 129 | 1 hammerstone |
| 6 | 8 | 130 | fancy cremas, 1 sherd disk, 1 urn and 1 figurine fragment, 2 polished hoe fragments, 1 piece mica, 2 pieces shell, 1 worked shell, 1 black obsidian noseplug |
| 6 | 8 | 132 | 6 pieces shell, 4 sherd disks, 1 animal effigy face, 1 urn, and 1 fig fragment, fancy ceramics, 1 gray and 1 green obsidian point, 2 white chert points, 1 scraper, and 2 bifaces, 1 small mano/abrader, mica |
| 6 | 8 | 134 | 1 urn fragment |
| 6 | 8 | 135 | 1 greenstone bead, 1 sherd disk, 4 urn and 2 figurine fragments, 4 pieces shell, 3 hammerstones, 1 gray obsidian point, 6 chert points, 2 drills, and 3 bifaces, basalt flakes, chert source on site, quartz and mica nearby |
| 6 | 10 | 2 | 1 spindle whorl, 1 kilnwaster, 19 pieces shell, 7 hammerstones, 1 pieee drilled quartz, 1 quartzite point, lots of quartz and quartzite |
| 6 | 10 | 3 | 1 tiny stone bead |
| 6 | 10 | 7 | 4 urn fragments, 1 clay concretion, 1 spindle whorl, 1 hammerstone, 1 gray obsidian core, 1 basalt flake, 1 chert point |
| 6 | 10 | 9 | 1 figurine and 2 urn fragments |
| 6 | 10 | 10 | 1 obsidian scraper, 1 quartz scraper |
| 6 | 10 | 13 | 1 urn fragment, 2 hammerstones, 1 quartz scraper |
| 6 | 10 | 15 | 5 urn and 5 figurine fragments, 1 elay bead, 1 spindle whorl, 1 hammerstone, 27 pieces shell |
| 6 | 10 | 19 | 1 chalcedony point |
| 6 | 10 | 20 | near a quartz outcrop |

## Appendix II.D: *Continued.*

| Area | Phase | Site | Comments |
|---|---|---|---|
| 6 | 10 | 23 | 1 point, 1 piece mica, 1 figurine fragment |
| 6 | 10 | 24 | 1 chalcedony core and 1 flake, 1 chert scraper, 1 quartz core, 1 crystalline green blade, 2 pieces shell, 2 urn fragments |
| 6 | 10 | 25 | chert debitage and 1 scraper, crystalline flakes |
| 6 | 10 | 26 | 1 chalcedony point |
| 6 | 10 | 32 | 3 urn fragments, 1 chalcedony flake |
| 6 | 10 | 38 | mica |
| 6 | 10 | 40 | small quartz outcrop |
| 6 | 10 | 42 | partial spindle whorl, 1 gray obsidian point |
| 6 | 10 | 47 | imitation Fine Orange, 2 figurine fragments, 1 pink bead, mica, 1 chalcedony point |
| 6 | 10 | 48 | 1 sherd disk, 1 spindle whorl, 1 piece mica, 1 gray obsidian point, 10 unworked shell, 1 shell disk |
| 6 | 10 | 49 | 1 fine gray sherd with incising (like Fine Orange) |
| 6 | 10 | 51 | 1 gray barrel-shaped sherd with incised banded lines |
| 6 | 10 | 52 | 1 urn fragment, 4 pieces shell |
| 6 | 11 | 12 | chert core worked into tool |
| 6 | 11 | 14 | 1 sherd disk |
| 6 | 11 | 21 | lots of lithic debris, 1 chert scraper |
| 6 | 11 | 44 | 1 urn fragment |
| 6 | 11 | 50 | lots of worked chert |
| 6 | 11 | 52 | 1 sherd disk |
| 6 | 11 | 55 | 1 sherd disk |
| 6 | 11 | 56 | 1 sherd disk |
| 6 | 11 | 57 | 4 sherd disks |
| 6 | 11 | 59 | jasper and chalcedony flakes, 1 figurine fragment |
| 6 | 11 | 69 | 3 kilnwasters, abundant schist hammerstones and debris, 10 other hammerstones, 1 quartzite point, 1 drilled quartz, 1 stone bead, 21 unworked shell, *sahumador* fragments, 1 spindle whorl, 1 red on cream (local) |
| 6 | 11 | 74 | 1 kilnwaster |
| 6 | 11 | 76 | 1 kilnwaster |
| 6 | 11 | 90 | 1 sherd disk, 1 piece shell |
| 6 | 11 | 98 | 1 piece shell, 1 piece mica |
| 6 | 11 | 100 | worked chert |
| 6 | 11 | 101 | 1 green obsidian core, 1 hammerstone, 1 chert scraper, 1 worked shell |
| 6 | 11 | 102 | bone fragments |
| 6 | 11 | 116 | 1 piece shell, 1 urn fragment |
| 6 | 11 | 139 | 6 worked sherd disks |
| 6 | 11 | 154 | 1 quartz point |
| 6 | 11 | 156 | 1 greenstone |
| 6 | 11 | 167 | 1 piece shell |
| 6 | 11 | 169 | 1 piece shell |
| 6 | 11 | 173 | 1 hammerstone, 1 spindle whorl, many ceramics look early V |
| 6 | 11 | 174 | ceramics look early V |
| 6 | 11 | 176 | 1 spindle whorl, 3 shell beads, 1 piece shell, 2 greenstone beads, mica, 1 urn fragment, polychromes, 7 Miahuatlán-style Huitzo sherds |
| 6 | 11 | 180 | 1 hammerstone, 1 piece shell, bone |
| 6 | 11 | 185 | 2 hammerstone, 1 chopper, 1 quartz scraper and debitage |
| 6 | 11 | 188 | 1 urn and1 figurine fragment, 2 hammerstones, 1 quartz scraper |
| 6 | 11 | 189 | lots of shell, 1 green obsidian point and 1 drill, 3 clay beads, 1 spindle whorl, 1 hammerstone, 1 bark beater 2 kilnwasters, 1 basalt flake, 8 urn and 8 figurine fragments |
| 6 | 11 | 193 | 1 piece shell |
| 6 | 11 | 198 | 1 greenstone pendant and 1 bead, many *sahumadores* |
| 6 | 11 | 199 | 2 pieces mica |
| 6 | 11 | 205 | 1 sherd disk |
| 6 | 11 | 207 | 1 green obsidian drill |
| 6 | 11 | 212 | 1 chalcedony point |
| 6 | 11 | 218 | 1 hoe, 6 points, 2 kilnwasters, 1 worked sherd and 2 disks, 2 pieces mica, 4 pieces shell, 1 quartz core, 1 chalcedony drill, 1 figurine and 2 urn fragments, 1 chalcedony and 2 chert scrapers, 1 crystalline green blade, *sahumadores* |
| 6 | 11 | 224 | 1 hammerstone, mica present |
| 6 | 11 | 229 | 1 hammerstone |
| 6 | 11 | 235 | 1 figurine fragment, 1 chert scraper |
| 6 | 11 | 238 | mica |
| 6 | 11 | 239 | mica |
| 6 | 11 | 240 | 1 urn fragment |
| 6 | 11 | 241 | 2 possible kilnwasters |
| 6 | 11 | 243 | 1 ground stone fragment, 2 quartz blades |
| 6 | 11 | 245 | 1 bat figurine |
| 6 | 11 | 246 | partial spindle whorl, 1 gray obsidian point |
| 6 | 11 | 250 | 1 greenstone bead |
| 6 | 11 | 252 | lots of mica, <50 m from mica mine |
| 6 | 11 | 254 | mica, quartz source 100 m downslope |

Appendix II.D: *Continued.*

| Area | Phase | Site | Comments |
|---|---|---|---|
| 6 | 11 | 255 | mica |
| 6 | 11 | 256 | mica, 1 chert point |
| 6 | 11 | 257 | 1 kilnwaster, 1 white chert bird point, 3 sherd disks, 1 *sahumador* |
| 6 | 11 | 260 | quartz outcrop |
| 6 | 11 | 267 | 3 urn fragments, 1 basalt hammerstone, 2 basalt flaks |
| 6 | 11 | 269 | 100 m from quartz source |
| 6 | 11 | 275 | 1 chalcedony point |
| 6 | 11 | 276 | 1 chert scraper |
| 6 | 11 | 288 | 1 piece shell, bone |
| 6 | 11 | 300 | near a small quartz source |
| 6 | 11 | 302 | 1 figurine fragment, 4 pieces shell, 1 sherd disk, mica, 1 polychrome |
| 6 | 11 | 304 | 1 figurine fragment, 1 kilnwaster, 1 gray obsidian point, and1 green scraper, basalt flakes, 2 hammerstones, 12 unworked shell and 1 disk, 2 sherd disks, 1 piece mica, 1 spindle whorl, 2 polychrome, bone |
| 6 | 11 | 305 | 3 unworked shell, 1 polychrome |
| 6 | 11 | 306 | 1 polychrome |
| 6 | 11 | 308 | 1 figurine fragment |
| 6 | 11 | 309 | 1 hammerstone |
| 6 | 11 | 320 | 1 hammerstone |
| 6 | 11 | 322 | quartz source below site |
| 6 | 11 | 331 | 1 gray obsidian point, 1 hammerstone |
| 6 | 11 | 340 | near small quartz source |
| 6 | 11 | 348 | 1 chert biface, 1 white chert core/scraper, basalt flakes |
| 6 | 11 | 349 | 1 sherd disk |
| 6 | 11 | 350 | 1 urn and 2 figurine fragments, 4 sherd disks, 5 pieces shell, 1 gray and 1 green obsidian point, 2 white chert points and several tools, 1 small mano/abrader |
| 6 | 11 | 354 | near quartz source, heavy density of obsidian |
| 6 | 11 | 355 | near quartz source |
| 6 | 11 | 357 | located on quartz source |
| 6 | 11 | 360 | on quartz outcrop |
| 6 | 11 | 362 | 4 urn and 2 figurine fragments, 1 hammerstone, 3 chert points and 2 drills, mica, on quartz source |

## Appendix III: Table 1. Number of Sites, Site Area, Population Range, and Average Population in Ejutla by Phase

| Phase | No. of sites | Total site area (ha) | Population range | Average population |
|---|---|---|---|---|
| Early Formative | 3 | 0.6 | 15–30 | 24 |
| Rosario | 4 | 1.5 | 24–52 | 40 |
| Early I | 21 | 12.1 | 154–352 | 259 |
| Late I | 63 | 211.7 | 2,042–4,851 | 3,455 |
| Monte Albán II | 46 | 114.5 | 1,294–3,047 | 2,184 |
| Monte Albán IIIA | 135 | 1,003.1 | 8,901–20,345 | 14,656 |
| Monte Albán IV | 52 | 153.9 | 1,883–4,154 | 3,029 |
| Monte Albán V | 362 | 1,071.1 | 11,917–27,825 | 19,970 |
| Unknown | 5 | — | — | — |

## Appendix III: Table 2. Number and Percentage of Sites in Different Environmental Zones by Phase

| | High alluvium | | Low piedmont | | Middle piedmont | | High piedmont | | Mountains | |
|---|---|---|---|---|---|---|---|---|---|---|
| Phase | Sites | % | Sites | % | Sites | % | Sites | % | Sites | % |
| Early Formative | 0 | — | 3 | 100.0 | 0 | — | 0 | — | 0 | — |
| Rosario | 0 | — | 4 | 100.0 | 0 | — | 0 | — | 0 | — |
| Early I | 2 | 9.5 | 19 | 90.5 | 0 | — | 0 | — | 0 | — |
| Late I | 4 | 6.4 | 53 | 84.1 | 6 | 9.5 | 0 | — | 0 | — |
| Monte Albán II | 6 | 13.1 | 29 | 63.1 | 10 | 21.7 | 1 | 2.1 | 0 | — |
| Monte Albán IIIA | 20 | 14.8 | 78 | 57.8 | 20 | 14.8 | 15 | 11.1 | 2 | 1.5 |
| Monte Albán IV | 4 | 7.7 | 24 | 46.2 | 19 | 36.5 | 5 | 9.6 | 0 | — |
| Monte Albán V | 36 | 9.9 | 230 | 63.5 | 59 | 16.3 | 34 | 9.4 | 3 | 0.8 |

## Appendix III: Table 3. Population and Percentage of Population in Different Environmental Zones by Phase

| | High alluvium | | Low piedmont | | Middle piedmont | | High piedmont | | Mountains | |
|---|---|---|---|---|---|---|---|---|---|---|
| Phase | Population | % | Population | % | Population | % | Population | % | Population | % |
| Early Formative | 0 | — | 24 | 100.0 | 0 | — | 0 | — | 0 | — |
| Rosario | 0 | — | 40 | 100.0 | 0 | — | 0 | — | 0 | — |
| Early I | 16 | 6.2 | 243 | 93.8 | 0 | — | 0 | — | 0 | — |
| Late I | 151 | 4.4 | 3,205 | 92.8 | 99 | 2.9 | 0 | — | 0 | — |
| Monte Albán II | 159 | 7.3 | 1,921 | 88.0 | 89 | 4.1 | 16 | 0.7 | 0 | — |
| Monte Albán IIIA | 401 | 2.7 | 11,880 | 81.1 | 899 | 6.1 | 1,259 | 8.6 | 217 | 15.0 |
| Monte Albán IV | 351 | 11.6 | 1,581 | 52.2 | 546 | 18.0 | 551 | 18.2 | 0 | — |
| Monte Albán V | 5,259 | 26.3 | 8,614 | 43.1 | 4,046 | 20.3 | 1,916 | 9.6 | 135 | 0.7 |

## Appendix III: Table 4. Percentage of Population at Different Elevations (in meters above sea level)

| Phase | 1350 | 1400 | 1450 | 1500 | 1550 | 1600 | 1650 | 1700 | 1750 | 1800 | 1850 | 1900+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Early Formative | 33.0 | — | 33.0 | 33.0 | — | — | — | — | — | — | — | — |
| Rosario | — | — | 80.0 | 20.0 | — | — | — | — | — | — | — | — |
| Early I | 3.0 | 13.5 | 70.7 | 12.7 | — | — | — | — | — | — | — | — |
| Late I | 6.1 | 17.8 | 52.4 | 19.2 | 0.5 | 2.1 | 1.9 | — | — | — | — | — |
| Monte Albán II | 21.8 | 22.1 | 46.6 | 5.1 | 1.1 | 2.0 | 0.6 | 0.7 | — | — | — | — |
| Monte Albán IIIA | 1.8 | 6.0 | 30.3 | 46.0 | 0.4 | 4.5 | 1.3 | 2.5 | 0.1 | 3.9 | — | 3.2 |
| Monte Albán IV | 0.3 | 7.4 | 19.8 | 18.7 | 0.5 | 9.7 | 18.3 | 1.7 | 0.5 | 19.2 | — | 4.0 |
| Monte Albán V | 0.7 | 18.3 | 29.0 | 10.2 | 11.4 | 5.9 | 1.7 | 3.1 | 0.2 | 18.1 | 0.7 | 0.7 |

## Appendix III: Table 5. Population by Distance from Monte Albán

| Phase | <36 km | | 36.1–44 km | | 44.1–52 km | | 52.1–60 km | | 60.1–68 km | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Population | % | Population | % | Population | % | Population | % | Population | % |
| Early Formative | 0 | — | 8 | 33.0 | 8 | 33.0 | 8 | 33.0 | 0 | — |
| Rosario | 0 | — | 24 | 60.0 | 16 | 40.0 | 0 | — | 0 | — |
| Early I | 0 | — | 40 | 15.5 | 135 | 52.2 | 76 | 29.3 | 08 | 3.1 |
| Late I | 330 | 9.6 | 160 | 4.6 | 1,461 | 42.3 | 1,241 | 35.9 | 263 | 7.6 |
| Monte Albán II | 0 | — | 145 | 6.6 | 135 | 6.2 | 1,526 | 69.9 | 378 | 17.3 |
| Monte Albán IIIA | 24 | 0.2 | 1,004 | 6.9 | 10,571 | 72.2 | 2,445 | 16.7 | 612 | 4.2 |
| Monte Albán IV | 0 | — | 202 | 6.7 | 1,420 | 46.9 | 1,399 | 46.2 | 8 | 0.3 |
| Monte Albán V | 565 | 2.8 | 4,465 | 22.3 | 4,344 | 21.7 | 10,282 | 51.5 | 314 | 1.6 |

## Appendix III. Table 6. Site Elevation and Hilltop Location

| Phase | Average elevation | Minimum elevation | Maximum elevation | Sites on hilltops | | Population on hilltops | |
|---|---|---|---|---|---|---|---|
| | | | | Sites | % | Population | % |
| Early Formative | 1433 | 1350 | 1500 | 0 | 0 | 0 | 0 |
| Rosario | 1463 | 1450 | 1500 | 0 | 0 | 0 | 0 |
| Early I | 1443 | 1350 | 1500 | 0 | 0 | 0 | 0 |
| Late I | 1470 | 1350 | 1650 | 0 | 0 | 0 | 0 |
| Monte Albán II | 1450 | 1350 | 1700 | 2 | 4.0 | 24 | 1.1 |
| Monte Albán IIIA | 1526 | 1350 | 2300 | 24 | 18.0 | 2,116 | 14.4 |
| Monte Albán IV | 1575 | 1350 | 2100 | 11 | 21.0 | 691 | 22.8 |
| Monte Albán V | 1529 | 1350 | 2000 | 41 | 11.0 | 5,377 | 26.9 |

## Appendix III. Table 7. Distance to Water and Sites Near Special Resources

| Phase | Average distance to water (km) | Special resources* | | | |
|---|---|---|---|---|---|
| | | Sites | % | Population | % |
| Early Formative | 0.03 | 0 | 0.0 | 0 | 0.0 |
| Rosario | 0.10 | 0 | 0.0 | 0 | 0.0 |
| Early I | 0.12 | 2 | 10.0 | 27 | 10.4 |
| Late I | 0.09 | 4 | 6.0 | 521 | 15.1 |
| Monte Albán II | 0.10 | 2 | 4.0 | 654 | 30.0 |
| Monte Albán IIIA | 0.13 | 13 | 10.0 | 9,151 | 62.4 |
| Monte Albán IV | 0.18 | 4 | 8.0 | 271 | 8.9 |
| Monte Albán V | 0.13 | 23 | 6.0 | 5,027 | 25.2 |

* Includes mica and other stone sources.

## Appendix III. Table 8. Nearest Water Source by Site and Population

| Phases | Main river | | Tributary | | Arroyo | | Spring | | Well | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Sites | % | Sites | % | Sites | % | Sites | % | Sites | % |
| Early Formative | 2 | 67.0 | 0 | 0.0 | 1 | 33.0 | 0 | 0.0 | 0 | 0.0 |
| Rosario | 2 | 50.0 | 1 | 25.0 | 1 | 25.0 | 0 | 0.0 | 0 | 0.0 |
| Early I | 6 | 28.5 | 9 | 43.0 | 6 | 28.5 | 0 | 0.0 | 0 | 0.0 |
| Late I | 13 | 20.6 | 24 | 38.1 | 25 | 39.7 | 1 | 1.6 | 0 | 0.0 |
| Monte Albán II | 14 | 30.4 | 6 | 13.0 | 25 | 54.4 | 1 | 2.2 | 0 | 0.0 |
| Monte Albán IIIA | 19 | 14.1 | 46 | 34.1 | 66 | 48.9 | 2 | 1.5 | 2 | 1.5 |
| Monte Albán IV | 6 | 11.5 | 11 | 21.2 | 32 | 61.5 | 3 | 5.8 | 0 | 0.0 |
| Monte Albán V | 35 | 9.7 | 91 | 25.1 | 222 | 61.3 | 7 | 1.9 | 7 | 1.9 |
| | **Population** | **%** | **Population** | **%** | **Population** | **%** | **Population** | **%** | **Population** | **%** |
| Early Formative | 16 | 66.7 | 0 | 0.0 | 8 | 33.3 | 0 | 0.0 | 0 | 0.0 |
| Rosario | 24 | 60.0 | 8 | 20.0 | 8 | 20.0 | 0 | 0.0 | 0 | 0.0 |
| Early I | 59 | 22.8 | 144 | 55.6 | 56 | 21.6 | 0 | 0.0 | 0 | 0.0 |
| Late I | 847 | 24.6 | 1,044 | 30.3 | 1,556 | 45.1 | 1 | 0.0 | 0 | 0.0 |
| Monte Albán II | 666 | 30.5 | 194 | 8.9 | 1,315 | 60.2 | 9 | 0.4 | 0 | 0.0 |
| Monte Albán IIIA | 1,018 | 6.9 | 9,154 | 62.5 | 4,396 | 30.0 | 67 | 0.5 | 21 | 0.1 |
| Monte Albán IV | 502 | 16.6 | 1,161 | 38.3 | 1,171 | 38.7 | 195 | 6.4 | 0 | 0.0 |
| Monte Albán V | 4,387 | 22.0 | 6,928 | 34.7 | 7,608 | 38.1 | 758 | 3.8 | 289 | 1.4 |

## Appendix IV. Ejutla Ceramic Data

This appendix includes diagnostic ceramic data collected during the Ejutla Valley settlement pattern survey. The ceramic data are organized by phase and component; the only exception is for the Early and Middle Formative ceramics, which we include in one file listed by collection. The files include the grid coordinates for each site component and the total collected area (in ha) in which ceramics of the respective phase were found. The ceramics are listed according to type categories that were devised for the regional surveys in the Valley of Oaxaca (Kowalewski et al., 1978; Blanton et al., 1982, app. VII; Kowalewski et al., 1989, app. VI). Those sources provide detailed information on each ceramic type, including temporal assignments. In brief, the first number of each type refers to the paste (0 = crema, 1 = gris, 2 = café, 3 = amarillo, 5 = polychrome).

The appendix includes only those ceramic types that were recorded in the Ejutla collections. Early and Middle Formative ceramic types that were found in the Valley of Oaxaca but not in Ejutla include T0601, T0603, T0604, T0605, T0606, T0607, T0608, T0609, T1502, T2500, T2503, T2504, T2505, T2506, T2507, T2508, T2509, T2513, T2514, T2515, T2516, T2517, T2519, and T2520.

Monte Albán Early I ceramics that were not recorded in Ejutla include T1332, T1351, T1360, T1367, T1368, T1370, T1373, and T1512. Other ceramic types that may also pertain to Monte Albán Late I that are not found in Ejutla include T0008, T0016, T0022, T0031, T0032, T0038, T0056, T0121, T0122, T0123, T0377, T0378, T0381, T0382, T0383, T0384, T0385, T0387, T0388, T0389, T0390, T0391, T0393, T0394, T0395, T0396, T0397, T0398, T0399, T0400, T0401, T0402, T0561, T1319, T1331, T1350, T1352, T.1369, T1371, T2042, T2412, and T2415.

Ceramics that pertain to Monte Albán II that were not recorded in Ejutla include T0021, T0023, T0377, T0378, T0405, T0407, T1419, T1420, and T2061. Monte Albán IIIA ceramics absent in Ejutla include T1421 and T3411. Other missing categories that pertain to Monte Albán IIIB or more broadly to Monte Albán III–IV include T1122, T1125, T1259, T1277, T1520, and T2083. Monte Albán V ceramics include T0424 and T5000.

For Monte Albán I, we have grouped a number of decorated gris ceramic types into a category that we call "fangris" category; types included as "fangris" are T1111, T1332, T1338, T1343, T1345, T1348, T1349, T1358, T1370, T1372, T1509, T1513, T1514, T1515, T1516, T1517, T1518, and T1519.

## Appendix IV. Early Formative and Rosario Phase Ceramics

| EF no. | Ros no. | N | E | Size | 0600 | 0602 | 1500 | 1501 | 1503 | 2501 | 2502 | 2510 | 2511 | 2512 | 2518 | 2521 | Fig | NDgrs | NDcrm | NDcfe | NDamr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EF-1 | — | 1 | 5 | 0.34 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 31 | 0 | 8 | 2 |
| EF-1 | R-1 | 1 | 5 | 0.03 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 3 | 1 | 1 | 12 | 6 | 6 | 0 |
| — | R-2 | 1 | 6 | 0.27 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30 | 0 | 9 | 2 |
| — | R-3 | 1 | 4 | 0.31 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 12 | 0 | 2 | 0 |
| — | R-4 | 1 | 4 | 0.89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 6 | 0 |
| EF-2 | R-4 | 1 | 4 | 0.16 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 4 | 0 | 0 | 0 | 10 | 0 | 10 | 0 |
| EF-3 | — | −4 | 5 | 0.11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 2 | 2 | 0 |

## Appendix IV. Early I Ceramics

| EI no. | N | E | Area | 0374 | 0375 | 0376 | 0379 | 0380 | 0403 | 1111 | 1143 | 1262 | 1338 | 1341 | 1343 | 1345 | 1348 | 1349 | 1358 | 1359 | 1372 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 3 | 6 | 0.66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 1 | 5 | 0.37 | 1 | 2 | 0 | 1 | 5 | 5 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 3 | −1 | 5 | 1.76 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 4 | 1 | 6 | 0.27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 |
| 8 | −2 | 6 | 1.10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | −2 | 6 | 0.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | −3 | 7 | 0.67 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | −2 | 7 | 0.21 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 1 | 4 | 0.31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 13 | 1 | 4 | 1.05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 2 |
| 14 | −2 | 5 | 0.19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 15 | −2 | 6 | 0.22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | −3 | 5 | 0.31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 18 | −3 | 7 | 0.35 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 19 | −3 | 7 | 0.14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | −4 | 5 | 0.41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | −6 | 6 | 0.11 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |

## Appendix IV. Early I Ceramics *Extended.*

| EI no. | 2010 | 1509 | 1511 | 1513 | 1514 | 1515 | 1516 | 1517 | 1518 | 1519 | 2052 | 2065 | 2072 | 2073 | 2076 | 2077 | 2079 | 2080 | 2085 | 2411 | 2412 | 2413 | 2415 | 3033 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 2 | 0 | 0 | 0 | 0 | 2 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 2 | 1 | 0 | 1 | 0 | 3 | 3 | 1 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 11 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 7 | 0 | 7 | 1 | 4 | 1 | 0 | 7 | 0 | 2 | 2 | 6 | 3 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 18 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |

## Appendix IV. Late I Ceramics

| LI no. | N | E | Area | 0018 | 0057 | 0374 | 0375 | 0376 | 0379 | 0380 | 0386 | 0403 | 0404 | 1111 | 1143 | 1207 | 1227 | 1241 | 1258 | 1262 | 1268 | 1297 | 1341 | 1345 | 1359 | 1366 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 3 | 6 | 0.66 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 4 | 1 | 5 | 0.37 | 0 | 2 | 1 | 2 | 0 | 1 | 5 | 0 | 5 | 0 | 1 | 1 | 16 | 7 | 3 | 1 | 0 | 0 | 7 | 0 | 1 | 0 | 1 |
| 5 | 1 | 6 | 0.10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 1 | 6 | 0.22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 7 | −1 | 5 | 0.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 8 | −1 | 5 | 0.28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 |
| 9 | −1 | 5 | 1.97 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 2 | 2 | 0 | 0 | 4 | 0 | 0 | 2 | 0 |
| 12 | 1 | 6 | 0.27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 14 | 4 | 2 | 1 | 0 | 0 | 4 | 0 | 2 | 0 | 0 |
| 14 | 1 | 6 | 0.29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 24 | 2 | 8 | 0.65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | −2 | 5 | 0.86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30 | −2 | 6 | 1.10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 32 | −2 | 6 | 0.26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 33 | −2 | 6 | 0.48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 34 | −2 | 6 | 0.45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 37 | −2 | 7 | 1.38 | 1 | 1 | 1 | 0 | 0 | 4 | 0 | 1 | 0 | 0 | 0 | 1 | 16 | 1 | 3 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 38 | 1 | 3 | 0.17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 39 | −2 | 3 | 0.15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 40 | 1 | 4 | 0.31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| 41 | 1 | 4 | 1.05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 1 | 1 | 0 | 6 | 0 | 2 | 0 | 0 |
| 43 | −1 | 4 | 0.35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 37 | 1 | 2 | 1 | 0 | 0 | 10 | 0 | 0 | 0 | 0 |
| 44 | 1 | 4 | 0.15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 1 | 0 | 0 |
| 45 | −2 | 5 | 0.19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 47 | −2 | 6 | 0.31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 5 | 1 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 49 | −4 | 5 | 0.23 | 0 | 0 | 8 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50 | −3 | 6 | 0.18 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 51 | −3 | 5 | 0.39 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 52 | −3 | 5 | 0.45 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 53 | −3 | 7 | 0.41 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 54 | −3 | 7 | 0.35 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 |
| 58 | −4 | 5 | 0.98 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 19 | 0 | 3 | 1 | 2 | 0 | 3 | 0 | 0 | 0 | 0 |
| 61 | −6 | 6 | 1.20 | 0 | 0 | 6 | 1 | 3 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 24 | 0 | 2 | 0 | 0 | 1 | 12 | 1 | 0 | 2 | 0 |
| 63 | −3 | 5 | 0.31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Appendix IV. Late I Ceramics *Extended.*

| LI no. | 1372 | 1509 | 1510 | 1514 | 1515 | 1519 | 2009 | 2010 | 2011 | 2013A | 2013B | 2013C | 2013D | 2040 | 2052 | 2064 | 2065 | 2072 | 2073 | 2076 | 2077 | 2078 | 2079 | 2080 | 2085 | 2413 | 2414 | 3033 | 3066 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 2 | 10 | 4 | 5 | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 3 | 2 | 0 | 5 | 2 | 0 |
| 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 12 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 2 | 2 | 1 | 0 | 1 | 2 | 0 | 2 | 18 | 1 | 8 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 6 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 33 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 37 | 1 | 0 | 0 | 0 | 0 | 3 | 8 | 0 | 1 | 4 | 4 | 1 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 2 | 2 | 1 |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 39 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| 41 | 2 | 0 | 0 | 4 | 1 | 2 | 0 | 7 | 0 | 19 | 0 | 3 | 1 | 1 | 2 | 0 | 6 | 3 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 6 | 0 | 0 |
| 43 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 13 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 5 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 1 | 0 | 0 |
| 45 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 47 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 51 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 52 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 53 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 1 | 10 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 54 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 58 | 4 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 1 | 17 | 1 | 2 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 1 | 4 | 4 | 8 | 5 | 1 | 1 | 0 | 0 | 1 |
| 61 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 13 | 22 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 4 |
| 63 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Appendix IV. Monte Albán II Ceramics

| II no. | N | E | Area | 0001 | 0002 | 0003 | 0004 | 0005 | 0006 | 0057 | 0374 | 0375 | 0376 | 0379 | 0380 | 0403 | 0404 | 0406 | 0610 | 1111 | 1143 | 1194 | 1207 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 6 | 0.14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 2 | 1 | 5 | 0.37 | 1 | 3 | 0 | 3 | 2 | 0 | 2 | 1 | 2 | 0 | 1 | 5 | 5 | 0 | 1 | 1 | 1 | 1 | 14 | 16 |
| 3 | 1 | 7 | 0.21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4 | 1 | 6 | 0.22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 5 | −1 | 5 | 0.28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 6 | 1 | 6 | 0.27 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 14 |
| 7 | −1 | 6 | 0.04 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 2 | 8 | 0.65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | −2 | 5 | 0.86 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| 12 | −2 | 6 | 1.10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 13 | −2 | 7 | 0.40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| 16 | −2 | 7 | 1.38 | 2 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 16 |
| 18 | 1 | 4 | 0.89 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| 21 | −3 | 4 | 0.57 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | −3 | 4 | 1.01 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 26 | −3 | 5 | 0.31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| 31 | −4 | 5 | 0.23 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 5 |
| 32 | −3 | 6 | 0.18 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 3 |
| 33 | −3 | 5 | 0.45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9 |
| 34 | −3 | 5 | 0.72 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 35 | −3 | 7 | 0.41 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 18 |
| 38 | −4 | 5 | 0.11 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 39 | −4 | 5 | 0.98 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 4 | 0 | 0 | 1 | 0 | 0 | 1 | 19 |
| 40 | −4 | 5 | 0.26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 43 | −6 | 5 | 0.29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 |
| 44 | −6 | 6 | 1.20 | 3 | 2 | 0 | 0 | 0 | 1 | 0 | 6 | 1 | 3 | 2 | 0 | 1 | 0 | 2 | 2 | 0 | 0 | 2 | 24 |

## Appendix IV. Monte Albán II Ceramics *Extended.*

| II no. | 1227 | 1241 | 1258 | 1268 | 1507 | 2009 | 2011 | 2013A | 2013B | 2013C | 2013D | 2040 | 2052 | 2073 | 2078 | 2085 | 2413 | 2414 | 2416 | 2417 | 3033 | 3066 | 3408 | 3409 | 3500 | 5100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 7 | 3 | 1 | 0 | 0 | 1 | 2 | 10 | 4 | 5 | 1 | 2 | 1 | 0 | 2 | 2 | 0 | 5 | 12 | 0 | 2 | 0 | 7 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 4 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | 4 | 2 | 1 | 0 | 0 | 2 | 2 | 18 | 1 | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 12 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 13 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 16 | 1 | 3 | 3 | 0 | 0 | 8 | 1 | 4 | 4 | 2 | 1 | 1 | 4 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 1 | 5 | 0 | 0 | 0 |
| 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 3 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 24 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 31 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 32 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 33 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 35 | 0 | 4 | 1 | 0 | 0 | 1 | 1 | 10 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 0 |
| 38 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 39 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 17 | 1 | 2 | 1 | 1 | 2 | 1 | 4 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 6 | 0 | 0 | 1 |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 | 0 | 2 | 0 | 1 | 3 | 0 | 13 | 22 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 4 | 6 | 2 | 0 | 1 |

## Appendix IV. Monte Albán IIIA Ceramics

| IIIA no. | N | E | Area | 0057 | 0404 | 1120 | 1123 | 1126 | 1137 | 1140 | 1143 | 1194 | 1207 | 1241 | 1258 | 1263 | 1264 | 1265 | 1268 | 1274 | 1312 | 1507 | 1508 | 2009 | 2013A | 2013B | 2013C | 2013D | 2086 | 3035 | 3410 | 3500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 | 2 | 6 | 1.66 | 0 | 0 | 5 | 0 | 9 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 7 | 3 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10 | 2 | 6 | 0.15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 11 | 1 | 5 | 0.34 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 11 | 12 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 7 | 2 | 4 | 0 | 0 | 0 | 0 | 0 |
| 13 | 1 | 6 | 0.10 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 1 | 7 | 0.21 | 0 | 0 | 1 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | −1 | 6 | 1.44 | 0 | 0 | 10 | 0 | 116 | 1 | 4 | 1 | 0 | 0 | 0 | 1 | 24 | 6 | 2 | 0 | 1 | 2 | 1 | 3 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 25 | 1 | 6 | 0.27 | 0 | 1 | 0 | 0 | 7 | 0 | 2 | 0 | 2 | 14 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 18 | 1 | 8 | 0 | 2 | 0 | 3 | 0 |
| 31 | −1 | 6 | 0.43 | 0 | 0 | 10 | 0 | 21 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 18 | 16 | 3 | 0 | 1 | 4 | 0 | 6 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| 34 | 2 | 8 | 0.40 | 0 | 0 | 2 | 1 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 5 | 3 | 0 | 2 | 4 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 |
| 36 | 1 | 8 | 0.03 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 44 | −1 | 8 | 0.66 | 0 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 51 | −2 | 6 | 0.83 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| 55 | −2 | 8 | 0.37 | 0 | 0 | 3 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 57 | −2 | 6 | 1.25 | 0 | 0 |  | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 65 | −2 | 6 | 0.56 | 0 | 1 | 0 | 0 | 48 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 11 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 74 | −2 | 7 | 1.38 | 1 | 0 | 0 | 0 | 38 | 0 | 1 | 1 | 2 | 16 | 3 | 3 | 16 | 1 | 4 | 0 | 1 | 0 | 0 | 0 | 8 | 4 | 4 | 2 | 1 | 0 | 0 | 1 | 0 |
| 78 | −2 | 7 | 0.18 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 91 | −2 | 9 | 0.07 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 98 | −1 | 3 | 0.03 | 0 | 0 | 1 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 106 | −1 | 4 | 0.36 | 0 | 0 | 0 | 0 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 107 | −2 | 3 | 0.15 | 0 | 0 | 4 | 0 | 13 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 108 | 1 | 4 | 0.31 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 7 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 109 | −2 | 4 | 0.29 | 0 | 0 | 15 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 112 | −2 | 5 | 0.51 | 0 | 0 | 4 | 0 | 23 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 114 | −3 | 5 | 0.31 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 115 | −3 | 5 | 0.34 | 0 | 0 | 5 | 0 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 116 | −3 | 6 | 0.38 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 117 | −3 | 5 | 0.39 | 0 | 0 | 5 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 118 | −3 | 5 | 0.45 | 0 | 0 | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 9 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 3 |
| 119 | −3 | 5 | 0.72 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 121 | −3 | 7 | 0.30 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 124 | −3 | 7 | 0.41 | 0 | 0 | 3 | 0 | 12 | 0 | 0 | 0 | 4 | 18 | 4 | 1 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 10 | 2 | 1 | 0 | 1 | 1 | 1 | 0 |
| 127 | −4 | 9 | 0.42 | 0 | 0 | 5 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 129 | −4 | 5 | 0.11 | 1 | 0 | 2 | 0 | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |
| 130 | −4 | 5 | 0.87 | 0 | 0 | 5 | 0 | 38 | 0 | 0 | 0 | 1 | 15 | 1 | 1 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 1 | 2 | 0 | 0 | 0 | 1 | 0 |
| 131 | −6 | 5 | 0.29 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 132 | −6 | 6 | 1.20 | 0 | 0 | 3 | 0 | 27 | 2 | 0 | 0 | 2 | 24 | 2 | 0 | 8 | 5 | 6 | 1 | 1 | 0 | 3 | 0 | 0 | 22 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 134 | −4 | 8 | 0.49 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 135 | −4 | 9 | 0.92 | 0 | 0 | 6 | 0 | 48 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 6 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 | 0 | 2 | 2 |

## Appendix IV. Monte Albán IV Ceramics

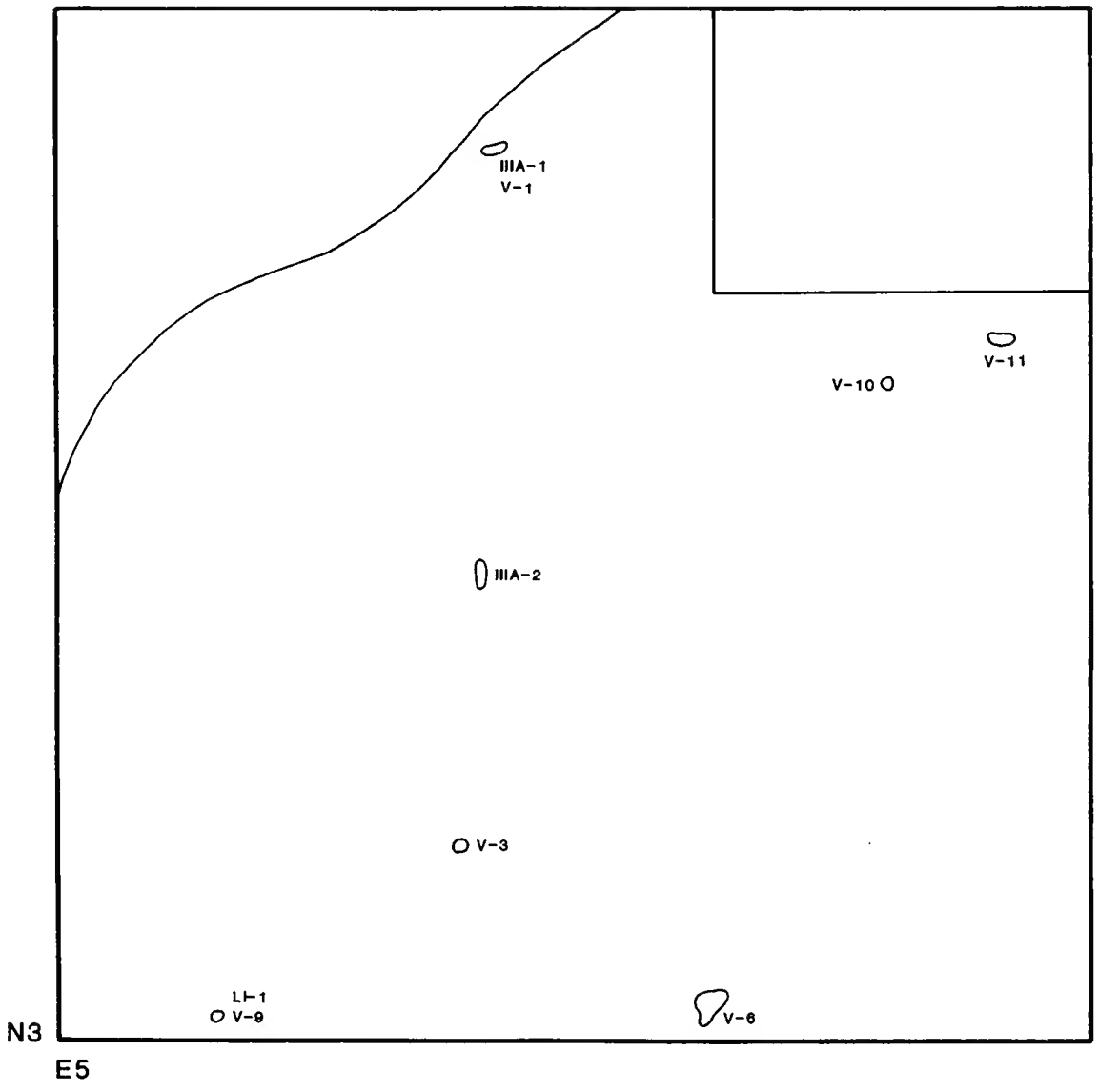
| IV no. | N | E | Area | 1120 | 1126 | 1137 | 1138 | 1140 | 1141 | 1143 | 1263 | 1274 | 1422 | 1508 | 2014 | 2086 | 2418 | 3030 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | 7 | 0.03 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 2 | 1 | 7 | 0.89 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 3 | 1 | 7 | 0.35 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 5 | −1 | 5 | 0.48 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 6 | −1 | 6 | 0.37 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | −1 | 6 | 0.40 | 6 | 83 | 1 | 0 | 3 | 0 | 0 | 9 | 4 | 5 | 4 | 0 | 2 | 0 | 4 |
| 8 | −1 | 6 | 0.39 | 1 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 9 | −1 | 6 | 0.06 | 4 | 8 | 0 | 0 | 1 | 0 | 0 | 8 | 0 | 4 | 1 | 0 | 0 | 0 | 1 |
| 10 | −2 | 6 | 1.25 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 3 | 0 | 0 | 0 | 0 |
| 13 | −2 | 6 | 0.42 | 0 | 33 | 0 | 0 | 0 | 0 | 0 | 1 | 6 | 2 | 0 | 0 | 3 | 0 | 1 |
| 14 | −2 | 6 | 0.14 | 0 | 15 | 0 | 0 | 0 | 0 | 1 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | −2 | 7 | 0.06 | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 11 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 16 | −2 | 8 | 0.51 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 23 | −2 | 9 | 0.71 | 1 | 5 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 3 | 2 | 0 | 0 |
| 24 | −2 | 9 | 0.10 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 |
| 29 | −1 | 6 | 0.13 | 3 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 32 | −1 | 3 | 0.04 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 39 | −1 | 4 | 0.28 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 42 | 1 | 4 | 0.89 | 4 | 4 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 45 | −2 | 4 | 0.15 | 9 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 |
| 46 | −2 | 5 | 0.03 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 47 | −3 | 4 | 0.11 | 4 | 13 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 1 | 3 |
| 48 | −3 | 7 | 0.21 | 2 | 9 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 51 | −4 | 5 | 0.41 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 52 | −6 | 6 | 0.61 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |

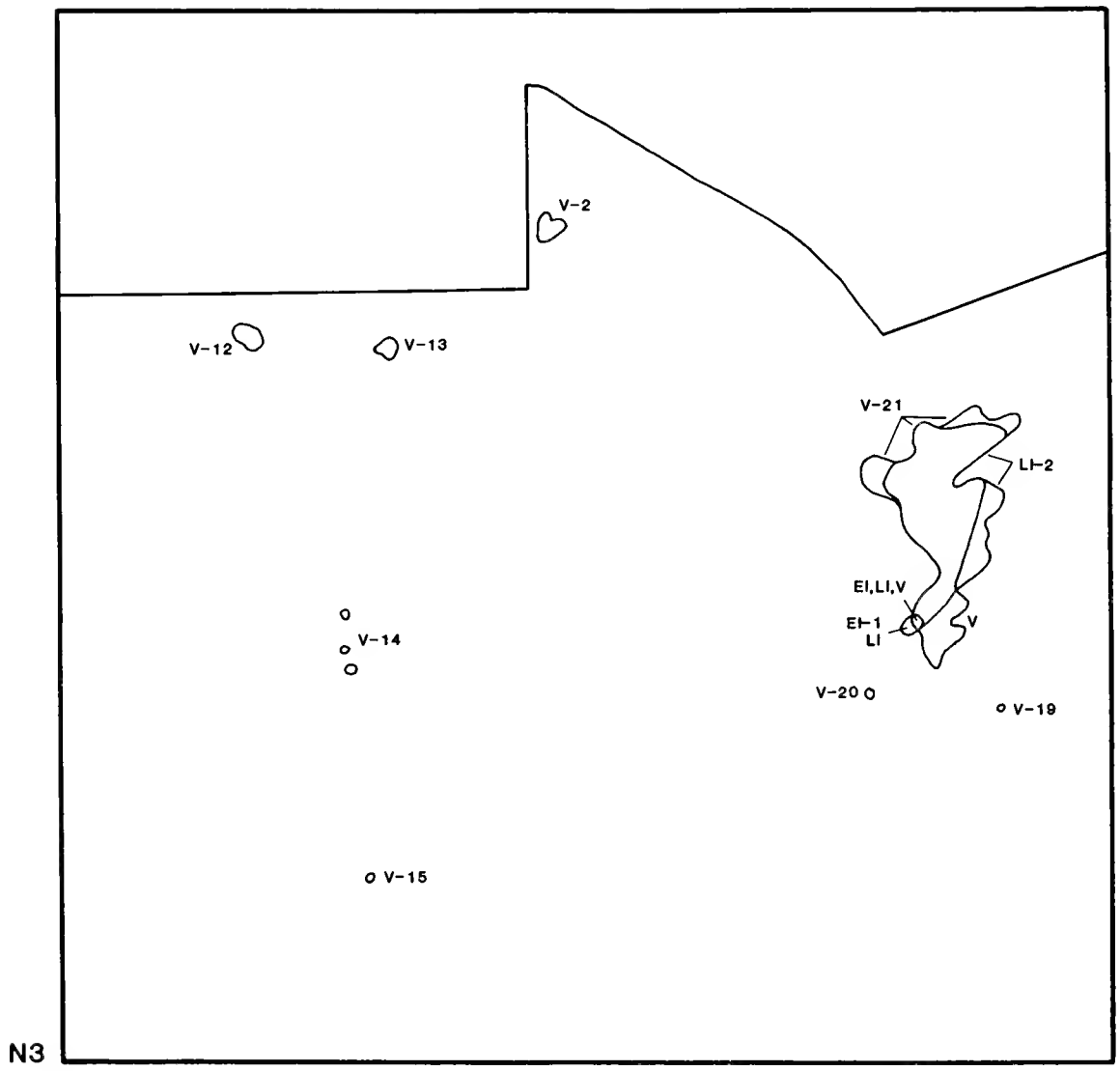
## Appendix IV. Monte Albán V Ceramics

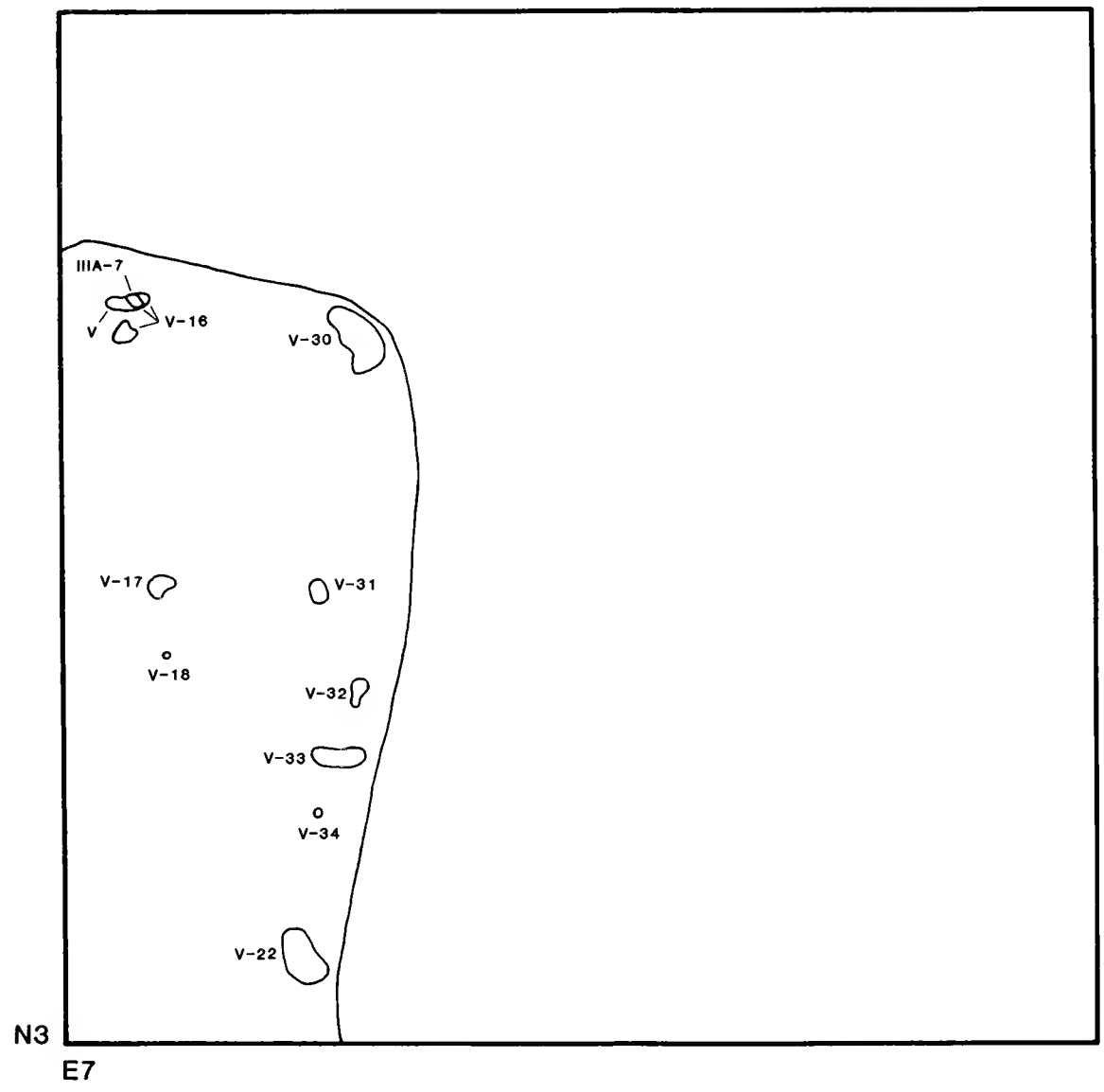
| V no. | N | E | Area | 0423 | 1102 | 1103 | 1104 | 1105 | 1106 | 1107 | 1108 | 1109 | 1400 | 2014 | 2220 | 2221 | 2222 | 2223 | 2224 | 5007 | 5425 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | 2 | 5 | 0.18 | 0 | 1 | 0 | 3 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 44 | 2 | 6 | 0.14 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 49 | 2 | 7 | 0.13 | 0 | 1 | 4 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 50 | 2 | 6 | 0.15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 59 | 1 | 5 | 0.37 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 69 | 1 | 7 | 1.37 | 1 | 0 | 0 | 52 | 49 | 3 | 19 | 13 | 17 | 16 | 8 | 6 | 7 | 1 | 3 | 5 | 1 | 1 |
| 83 | 1 | 6 | 0.29 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 87 | −1 | 5 | 0.48 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 101 | 1 | 6 | 0.27 | 0 | 0 | 0 | 4 | 5 | 0 | 4 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| 112 | −1 | 6 | 0.39 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 116 | −1 | 6 | 0.20 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 129 | 2 | 7 | 0.10 | 1 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 132 | 2 | 8 | 0.30 | 0 | 0 | 0 | 1 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 135 | 1 | 7 | 0.19 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 139 | 2 | 8 | 0.65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 161 | −2 | 5 | 0.86 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 174 | −2 | 8 | 2.30 | 0 | 0 | 0 | 6 | 4 | 8 | 0 | 4 | 2 | 2 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 |
| 175 | −2 | 8 | 0.37 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 176 | −3 | 5 | 2.05 | 1 | 2 | 0 | 39 | 34 | 15 | 4 | 1 | 6 | 9 | 0 | 0 | 2 | 0 | 0 | 1 | 8 | 7 |
| 180 | −2 | 6 | 0.48 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 185 | −2 | 6 | 0.45 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 188 | −2 | 7 | 0.40 | 0 | 1 | 0 | 2 | 7 | 0 | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 189 | −2 | 7 | 1.12 | 0 | 2 | 0 | 12 | 7 | 14 | 4 | 0 | 0 | 3 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 198 | −2 | 7 | 0.18 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 0 | 0 | 1 | 0 | 0 |
| 205 | −2 | 8 | 0.51 | 1 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | 0 | 4 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 218 | −2 | 9 | 1.07 | 0 | 0 | 0 | 23 | 22 | 4 | 5 | 0 | 2 | 14 | 3 | 3 | 0 | 0 | 0 | 2 | 0 | 0 |
| 224 | 1 | 3 | 0.17 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 235 | −1 | 3 | 0.03 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 240 | −1 | 4 | 0.36 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 243 | −2 | 3 | 0.15 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 245 | 1 | 4 | 0.31 | 0 | 0 | 0 | 5 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 246 | 1 | 4 | 0.89 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 250 | −1 | 4 | 0.35 | 0 | 0 | 0 | 1 | 5 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 257 | −2 | 4 | 0.29 | 0 | 1 | 0 | 2 | 2 | 3 | 1 | 0 | 0 | 6 | 0 | 1 | 0 | 1 | 3 | 2 | 0 | 0 |
| 265 | −3 | 4 | 0.57 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 267 | −2 | 5 | 0.51 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 287 | −3 | 5 | 0.03 | 0 | 0 | 0 | 2 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 288 | −3 | 5 | 0.31 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 291 | −3 | 5 | 0.27 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 295 | −4 | 5 | 0.23 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 302 | −3 | 7 | 0.30 | 0 | 1 | 0 | 10 | 8 | 3 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 304 | −3 | 7 | 0.41 | 0 | 2 | 0 | 15 | 11 | 7 | 1 | 0 | 1 | 5 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 |
| 320 | −4 | 8 | 0.35 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 |
| 331 | −4 | 5 | 0.11 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 333 | −4 | 5 | 0.82 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 337 | −4 | 5 | 0.26 | 0 | 0 | 0 | 5 | 3 | 3 | 0 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 346 | −6 | 5 | 0.29 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 350 | −6 | 6 | 1.20 | 1 | 0 | 0 | 14 | 7 | 3 | 0 | 1 | 1 | 12 | 1 | 3 | 1 | 0 | 1 | 0 | 1 | 1 |
| 360 | −5 | 7 | 0.71 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| 362 | −4 | 9 | 0.92 | 0 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |

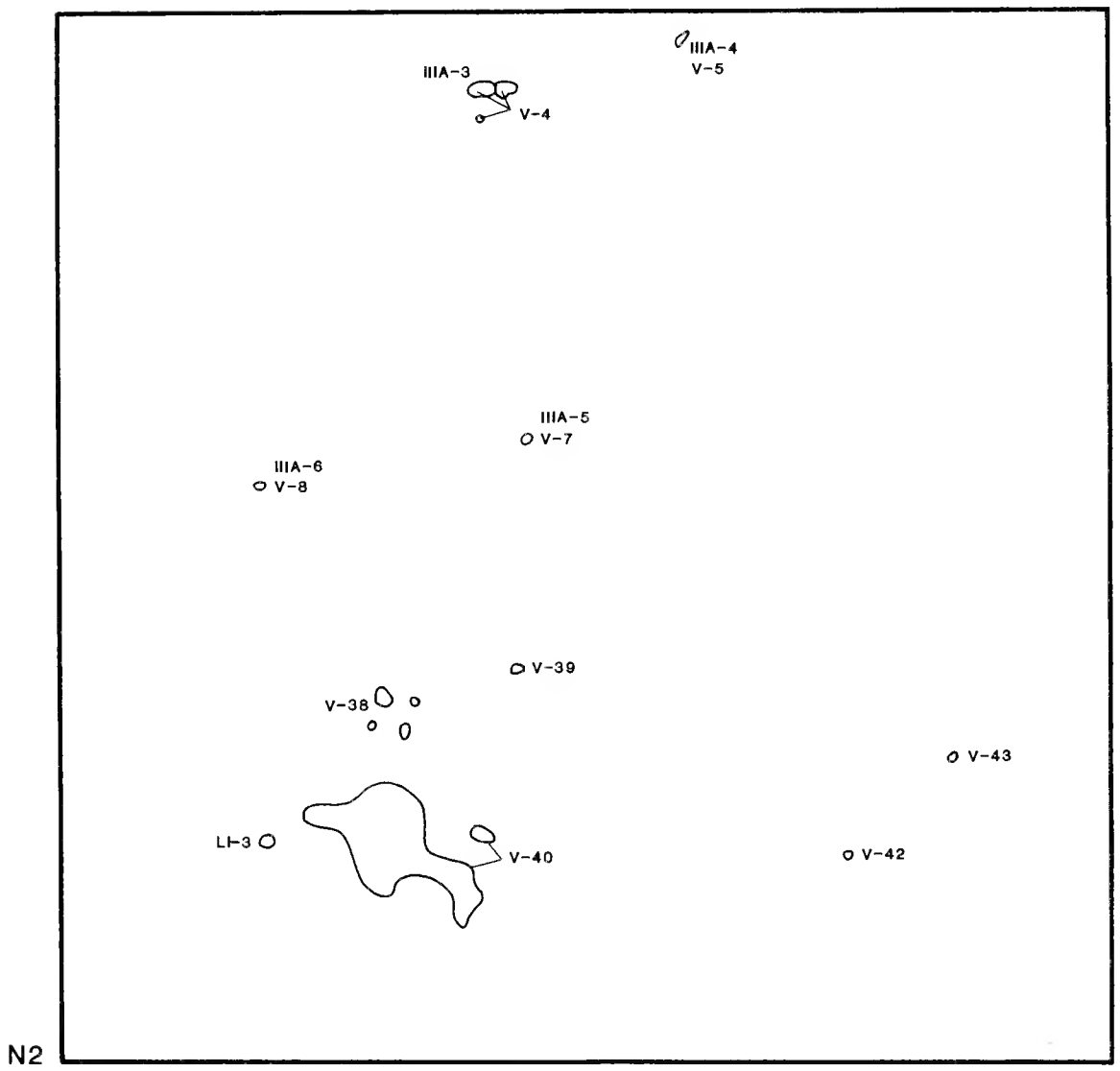
## Appendix V. Grid Square Maps

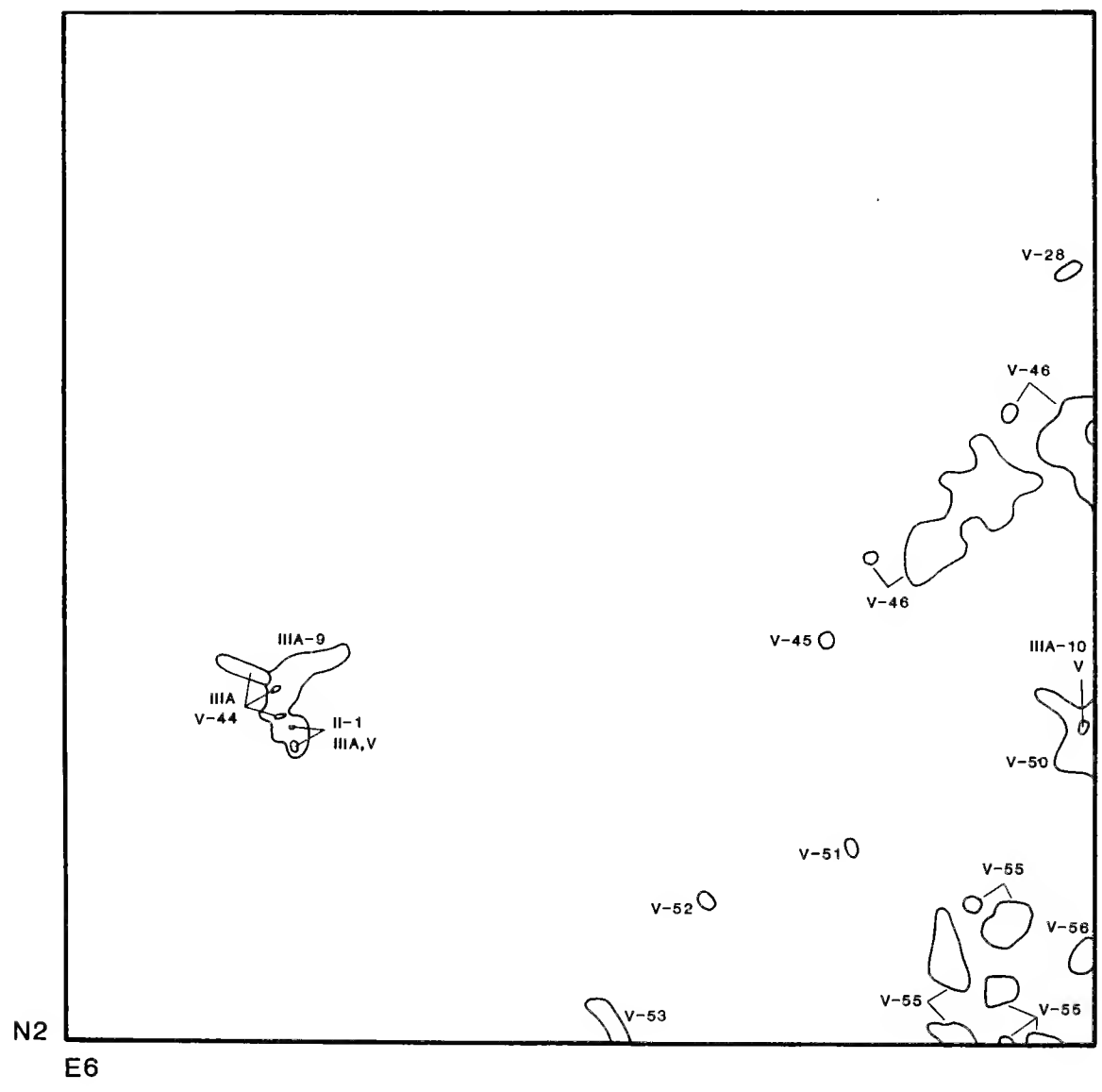
We extended the system of 4 × 4-km grid squares that was established for the Valley of Oaxaca south into Ejutla. This appendix consists of maps for each grid square that show the location and boundaries of each phase component for every site that was identified during the settlement pattern survey of the Ejutla region. Each grid square measures 4 × 4 km and is numbered in the lower left corner. We use the phase component numbers that we assigned to each site to identify them on the grid square maps (the corresponding field site numbers are listed in Appendix I.B). One square, S2E7, was very congested so that early phases were placed on one map and IV and V on a second map.

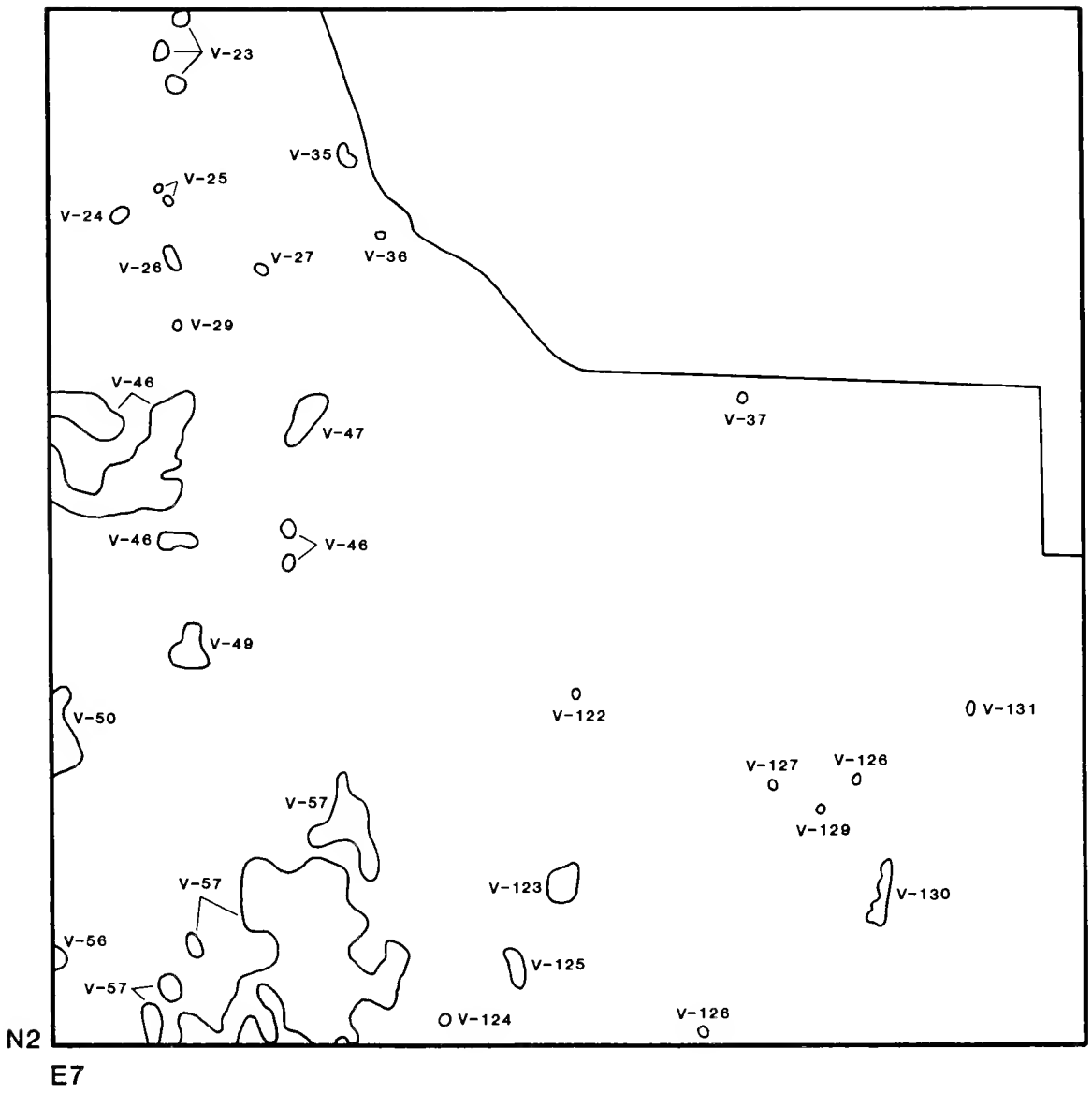


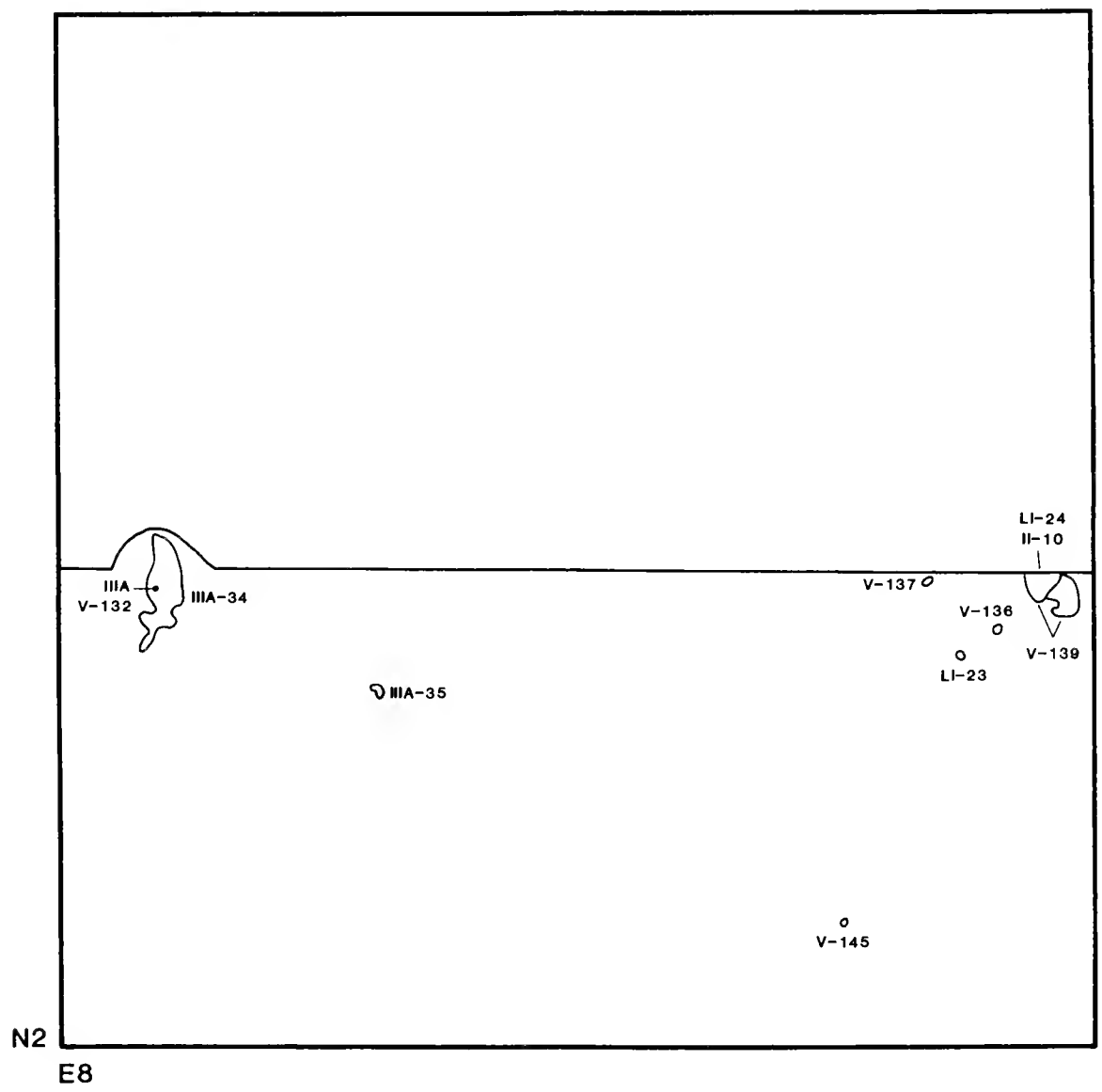

V-2
V-12
V-13
V-21
LI-2
EI,LI,V
EI-1
LI
V
V-14
V-20
V-19
V-15
N3
E6

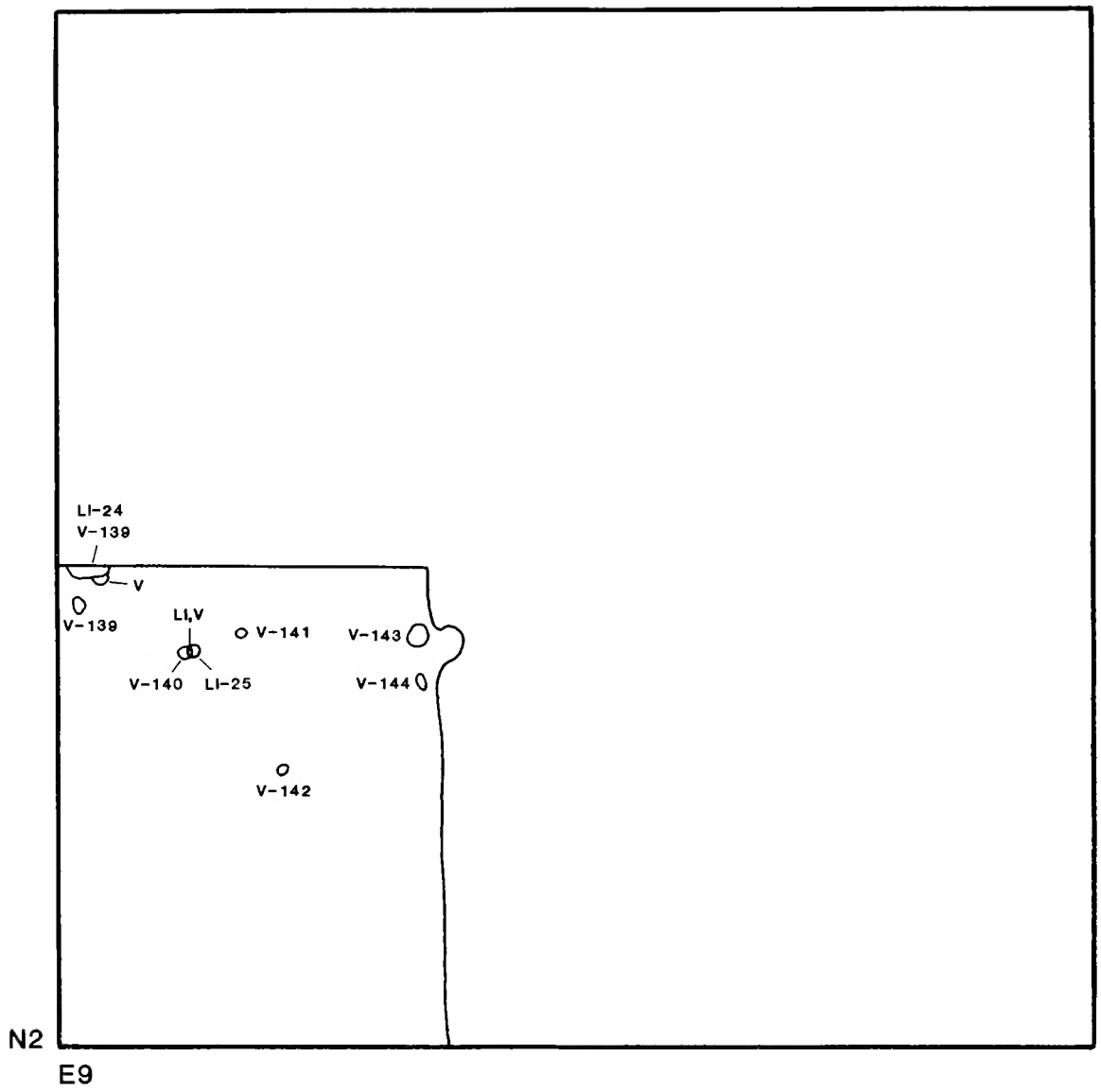

IIIA-7
V
V-16
V-30
V-17
V-31
V-18
V-32
V-33
V-34
V-22
N3
E7

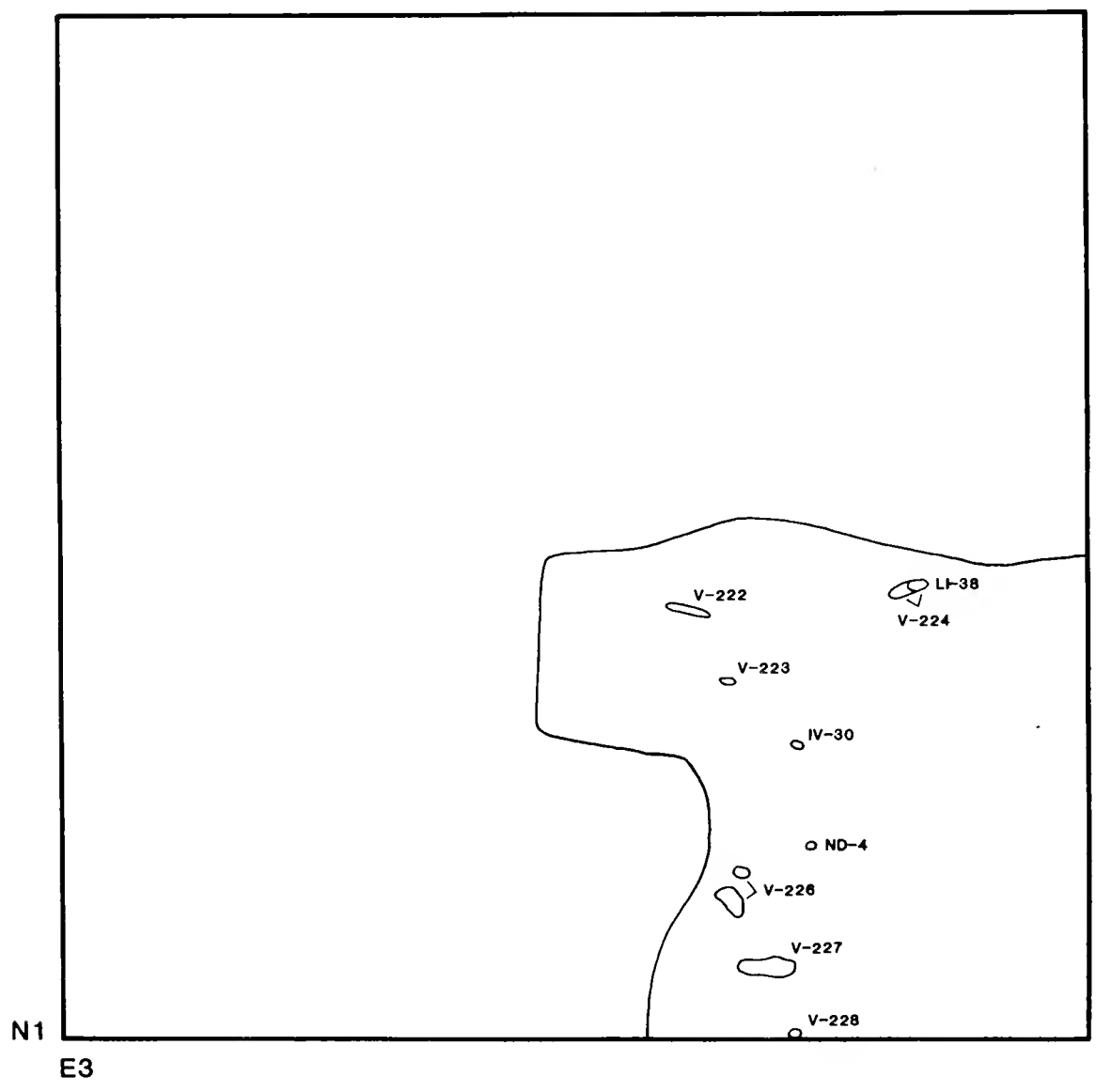

IIIA-4
V-5
IIIA-3
V-4
IIIA-5
V-7
IIIA-6
V-8
V-39
V-38
V-43
LI-3
V-40
V-42
N2
E5

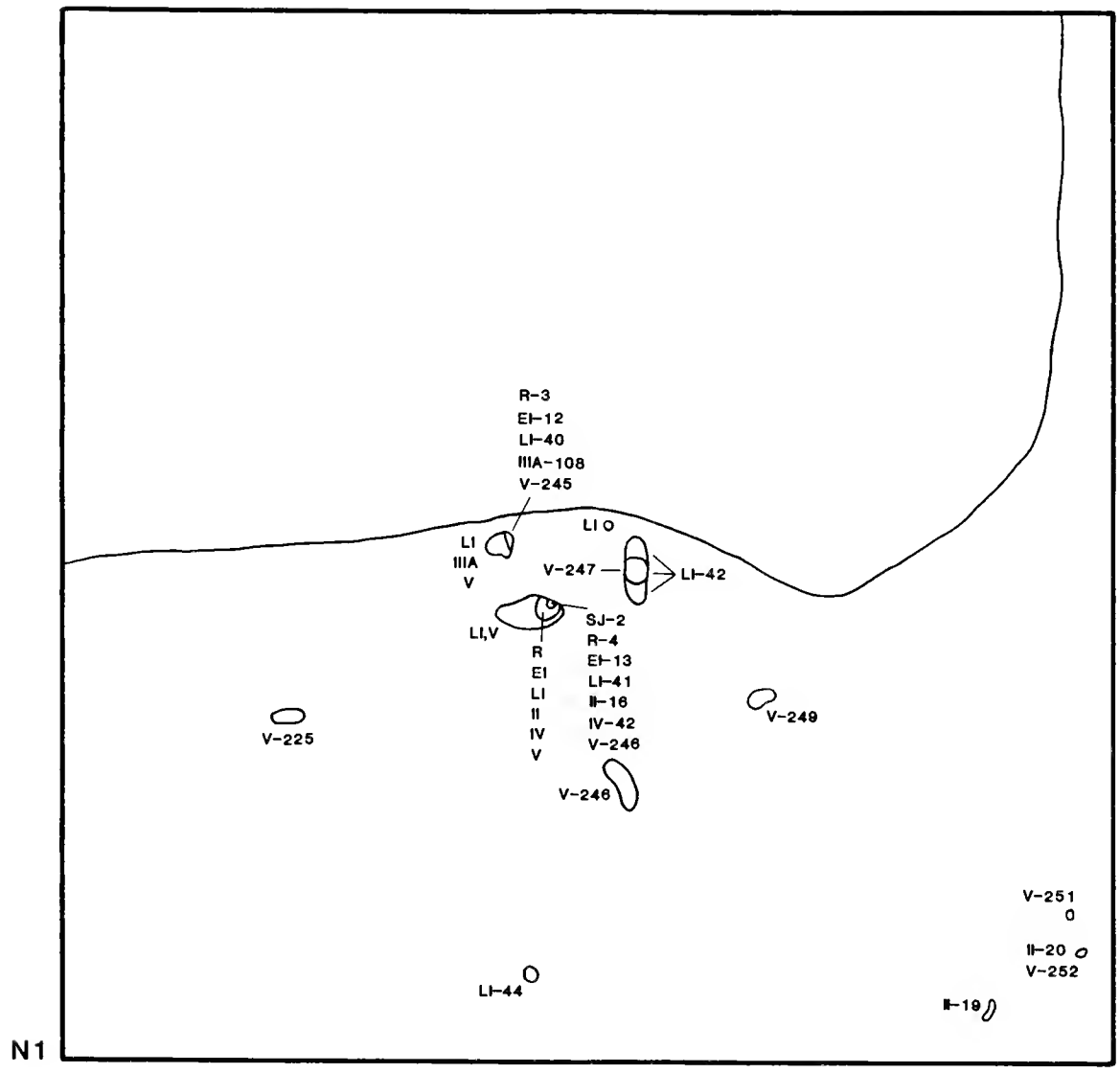

V-28
V-46
V-46
IIIA-9
IIIA
V-44
II-1
IIIA,V
V-45
IIIA-10
V
V-50
V-51
V-55
V-52
V-56
V-55
V-55
V-53
N2
E6

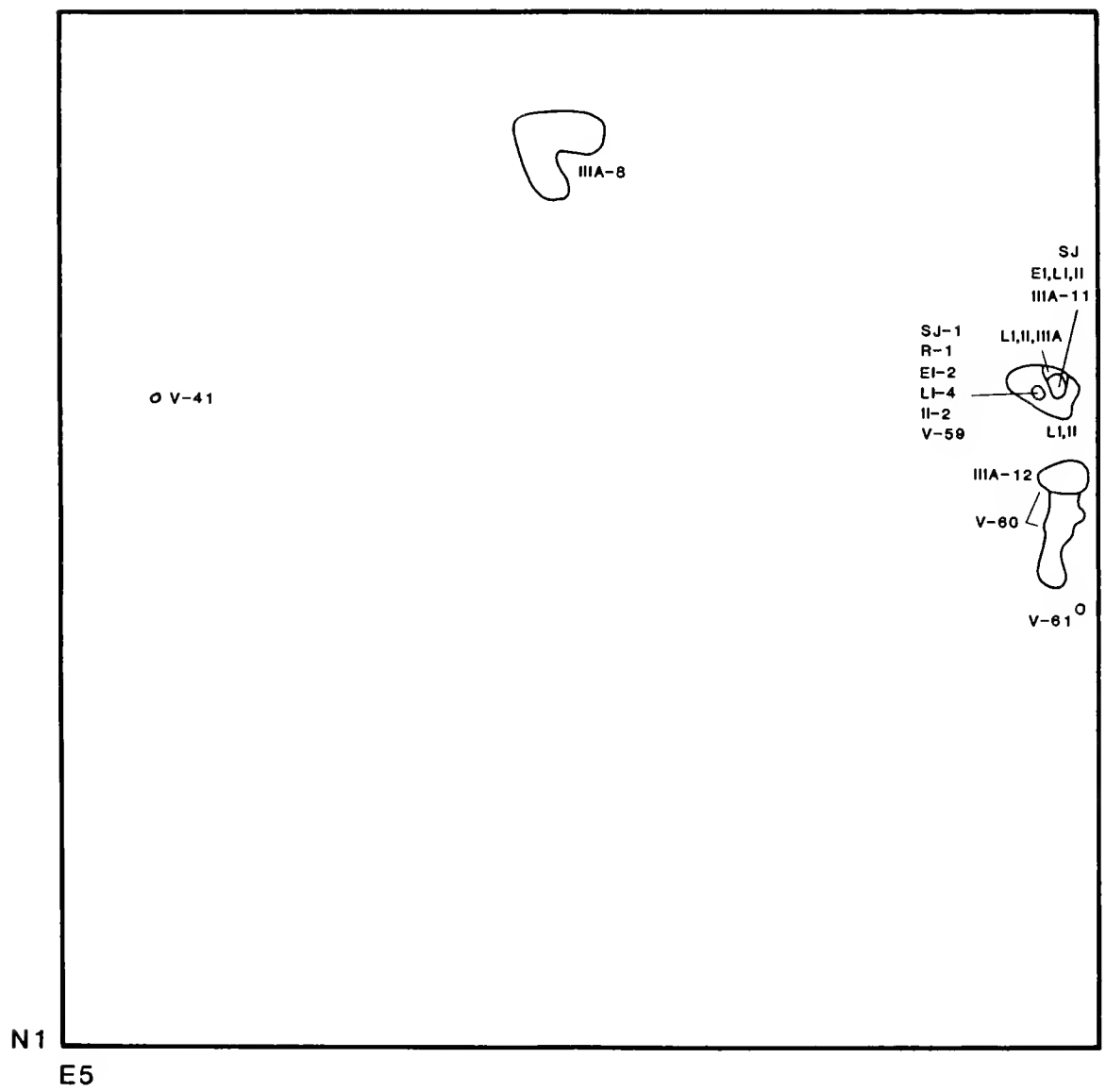

V-23
V-35
V-25
V-24
V-26
V-27
V-36
V-29
V-46
V-47
V-37
V-46
V-46
V-49
V-50
V-122
V-131
V-127
V-126
V-57
V-129
V-57
V-123
V-130
V-56
V-125
V-57
V-124
V-126
N2
E7

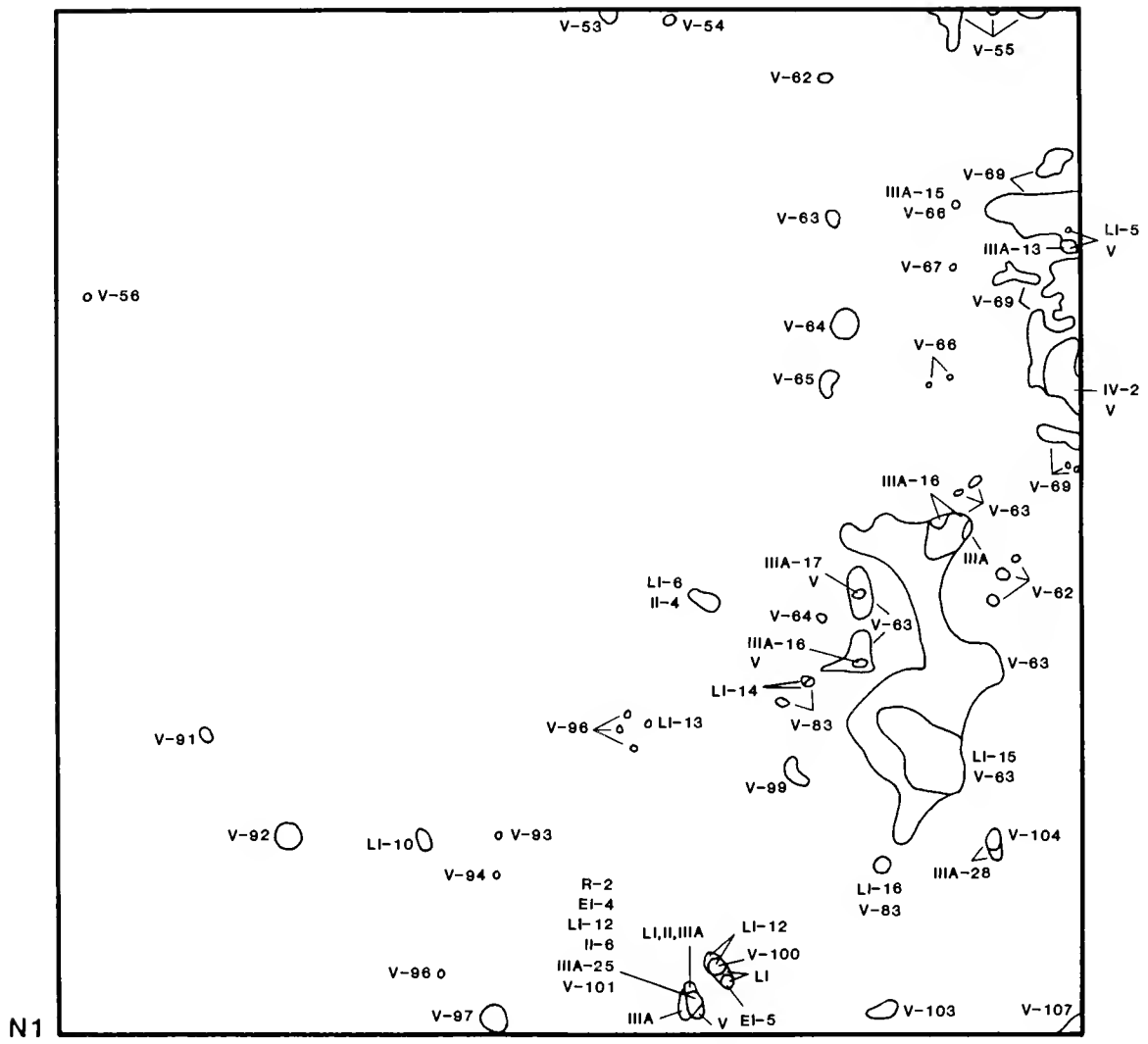

LI-24
II-10
IIIA
V-132
IIIA-34
V-137
V-136
V-139
LI-23
IIA-35
V-145
N2
E8

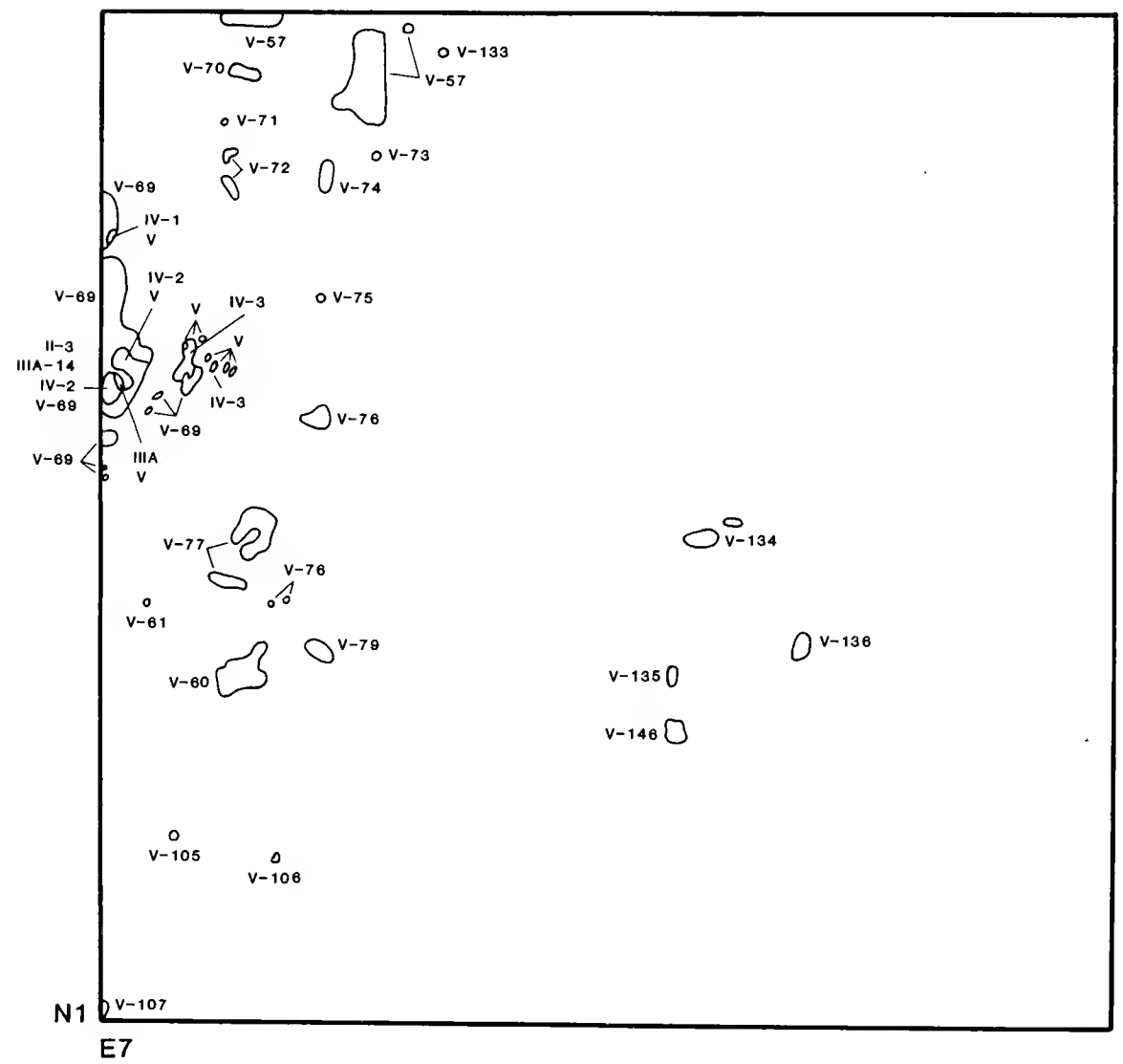

LI-24
V-139
V
V-139
LI,V
V-141
V-143
V-140
LI-25
V-144
V-142
N2
E9

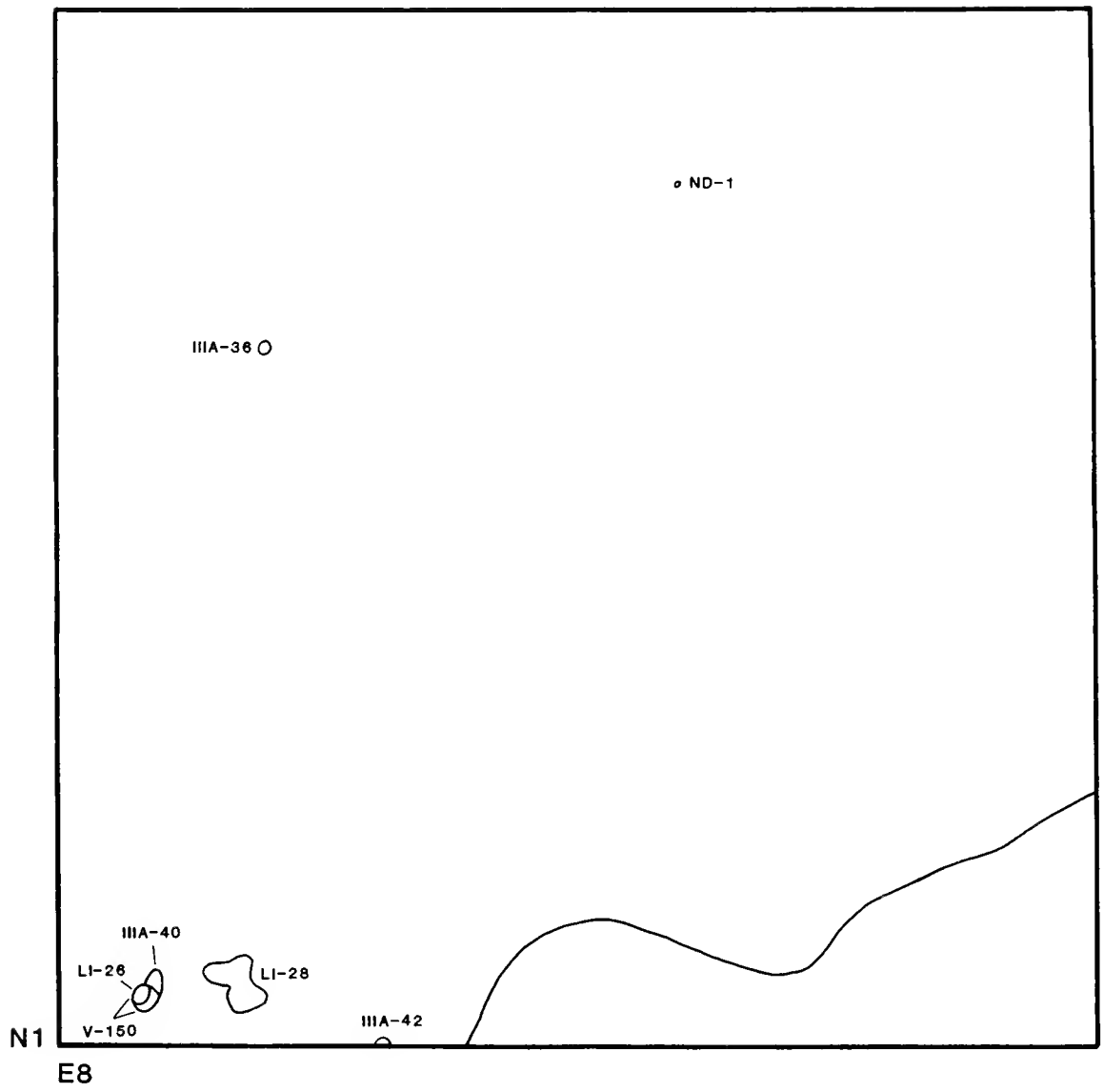

V-222
LI-38
V-224
V-223
IV-30
ND-4
V-226
V-227
V-228
N1
E3

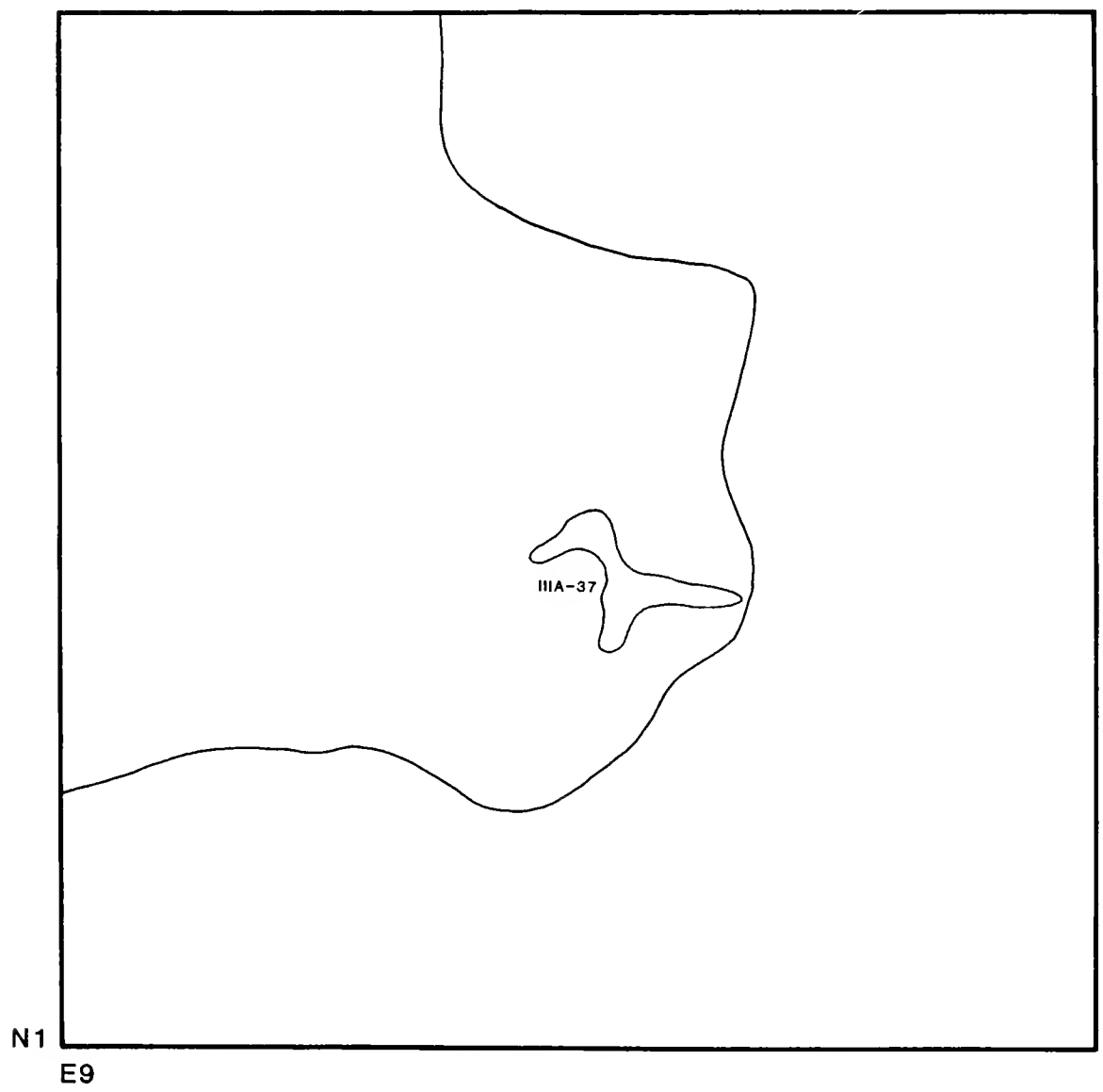

R-3
EI-12
LI-40
IIIA-108
V-245
LI
IIIA
V
LI O
V-247
LI-42
LI,V
SJ-2
R-4
EI-13
LI-41
II-16
IV-42
V-246
R
EI
LI
II
IV
V
V-225
V-249
V-246
V-251
O
II-20
V-252
LI-44
II-19
N1
E4

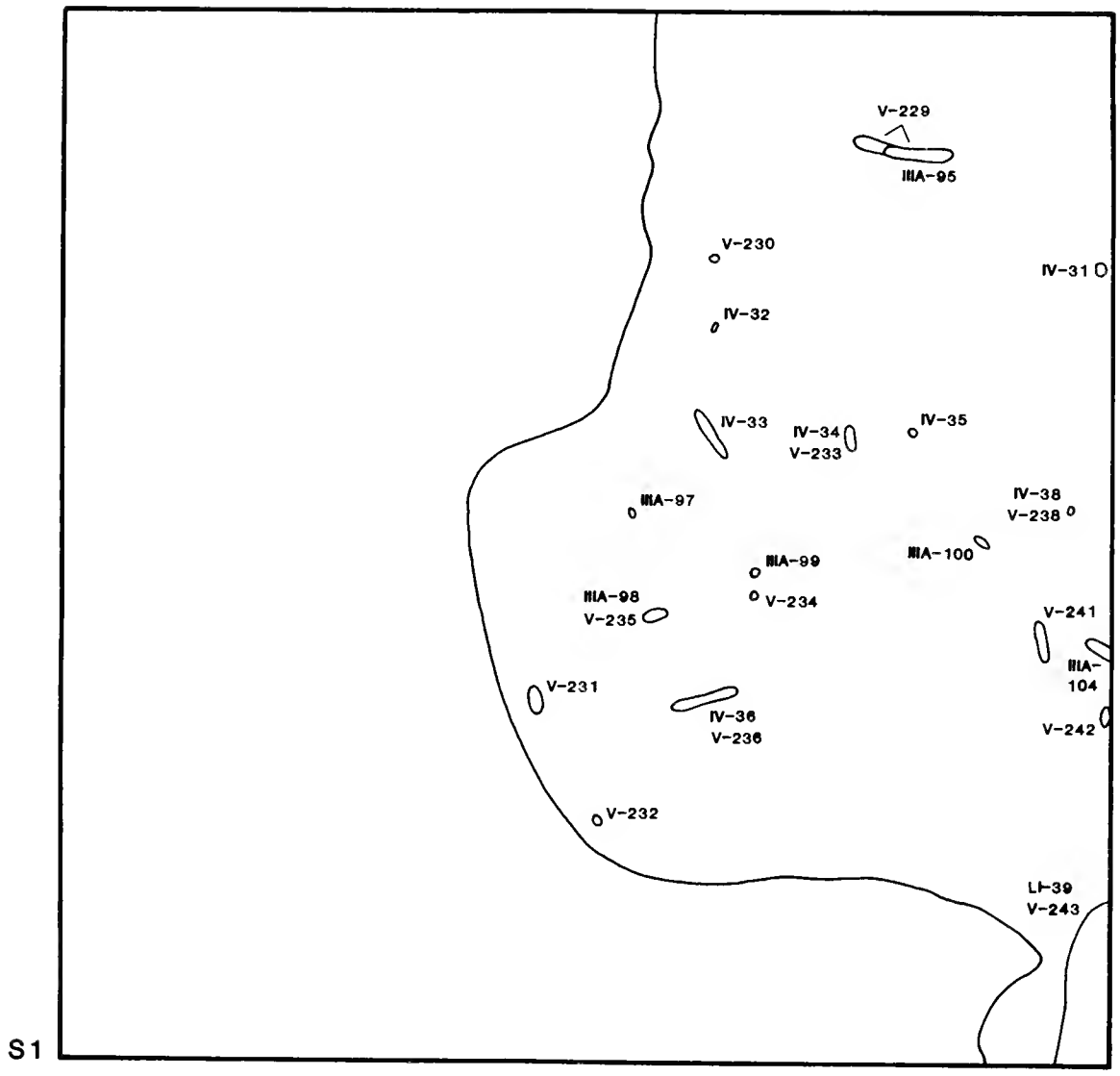

IIIA-8
SJ
EI,LI,II
IIIA-11
SJ-1
R-1
EI-2
LI-4
II-2
V-59
LI,II,IIIA
LI,II
V-41
IIIA-12
V-60
V-61
N1
E5

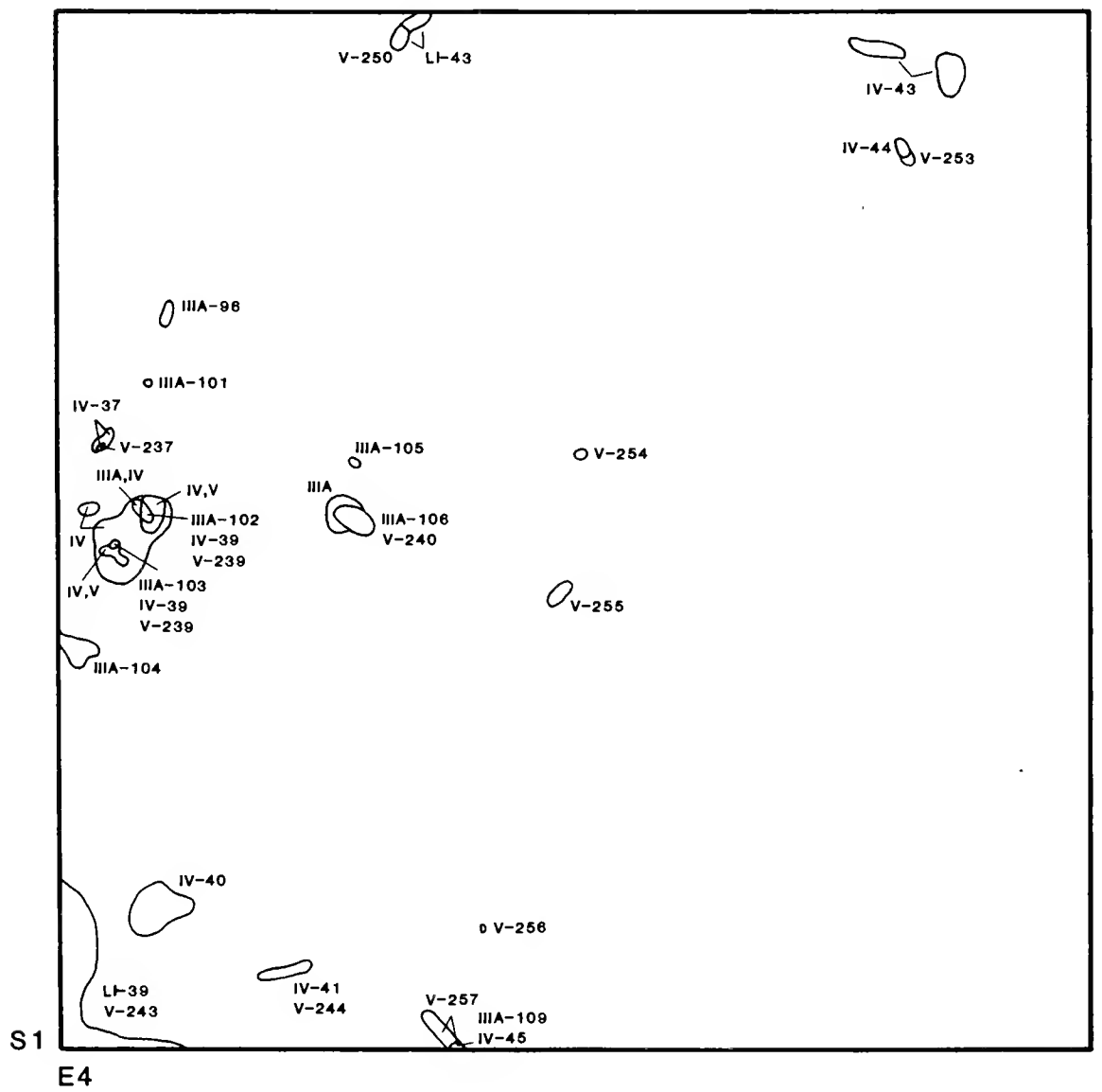

V-53
V-54
V-55
V-62
V-69
IIIA-15
V-66
V-63
LI-5
V
IIIA-13
V-67
V-56
V-69
V-64
V-66
V-65
IV-2
V
V-69
IIIA-16
V-63
IIIA-17
V
IIIA
V-62
LI-6
II-4
V-64
V-63
IIIA-16
V
V-63
LI-14
V-83
V-96
LI-13
V-91
LI-15
V-63
V-99
V-92
LI-10
V-93
V-104
IIIA-28
V-94
LI-16
V-83
R-2
EI-4
LI-12
II-6
LI,II,IIIA
LI-12
V-100
LI
V-96
IIIA-25
V-101
V-97
IIIA
V
EI-5
V-103
V-107
N1
E6

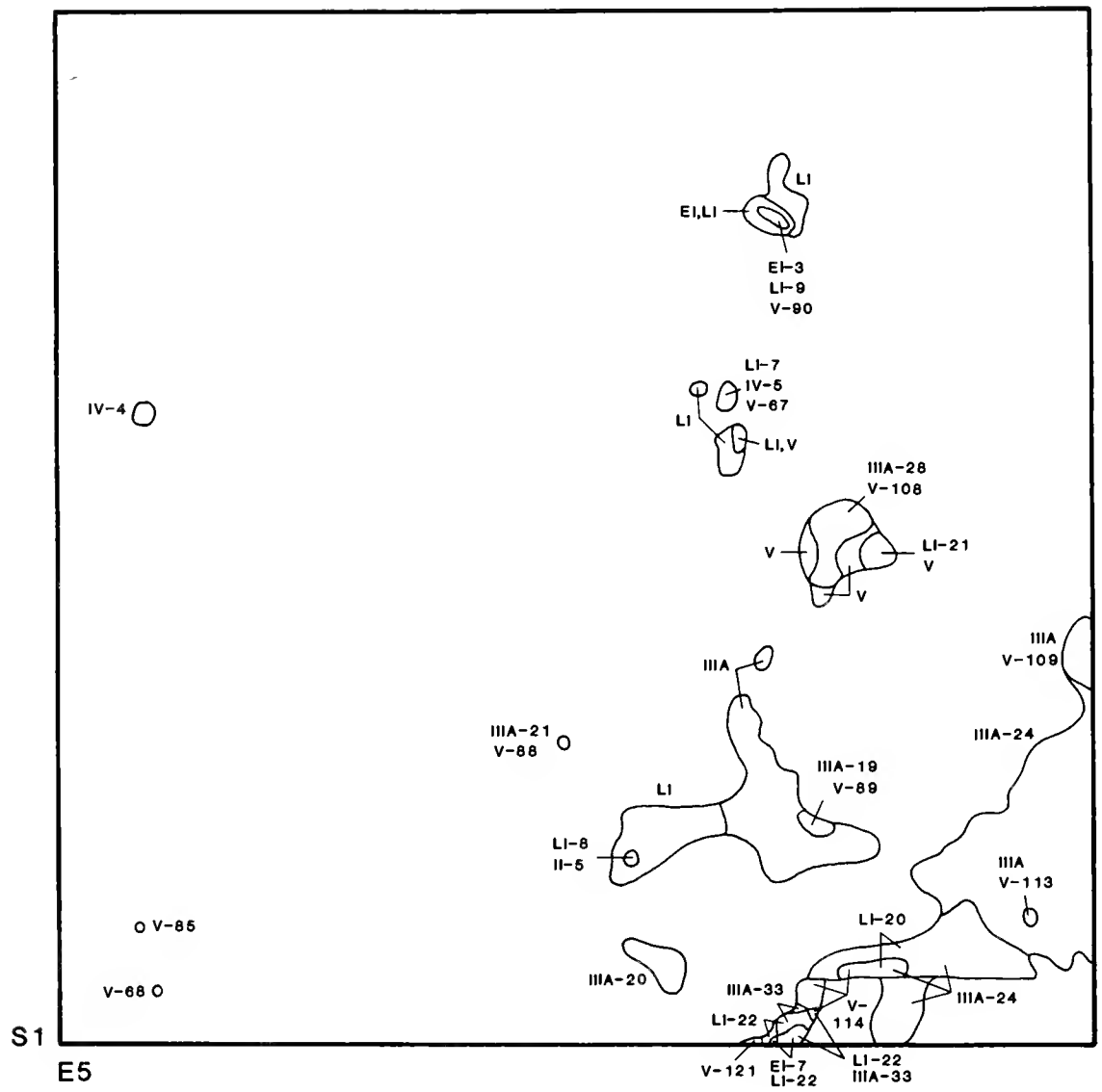

V-57
V-70
V-133
V-57
V-71
V-73
V-72
V-74
V-69
IV-1
V
IV-2
V
V-69
V
IV-3
V-75
V
II-3
IIIA-14
IV-2
V-69
IV-3
V-69
V-76
V-69
IIIA
V
V-77
V-134
V-76
V-61
V-79
V-136
V-60
V-135
V-146
V-105
V-106
N1
V-107
E7

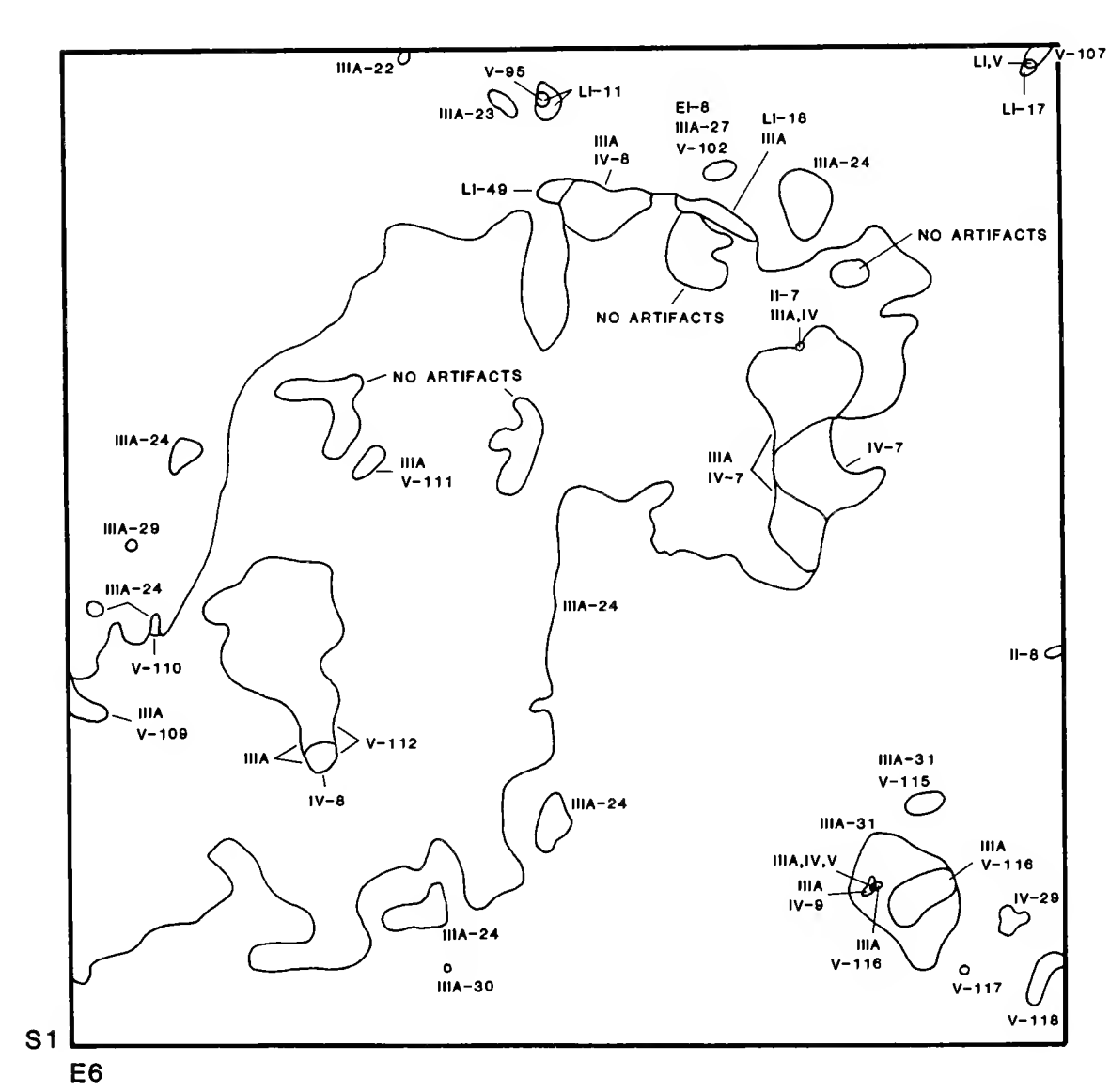

ND-1
IIIA-36
IIIA-40
LI-26
LI-28
V-150
IIIA-42
N1
E8

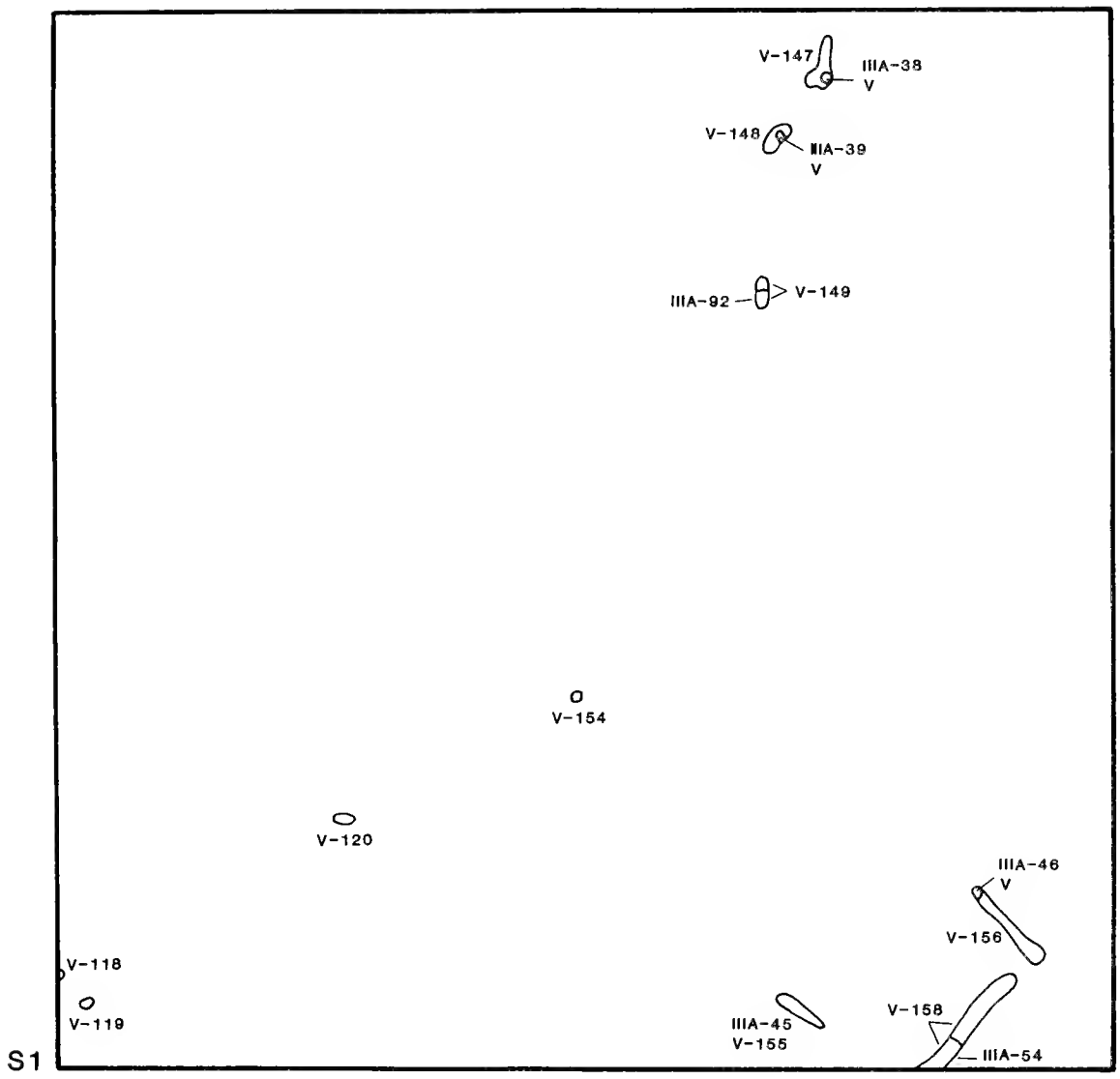

IIIA-37
N1
E9

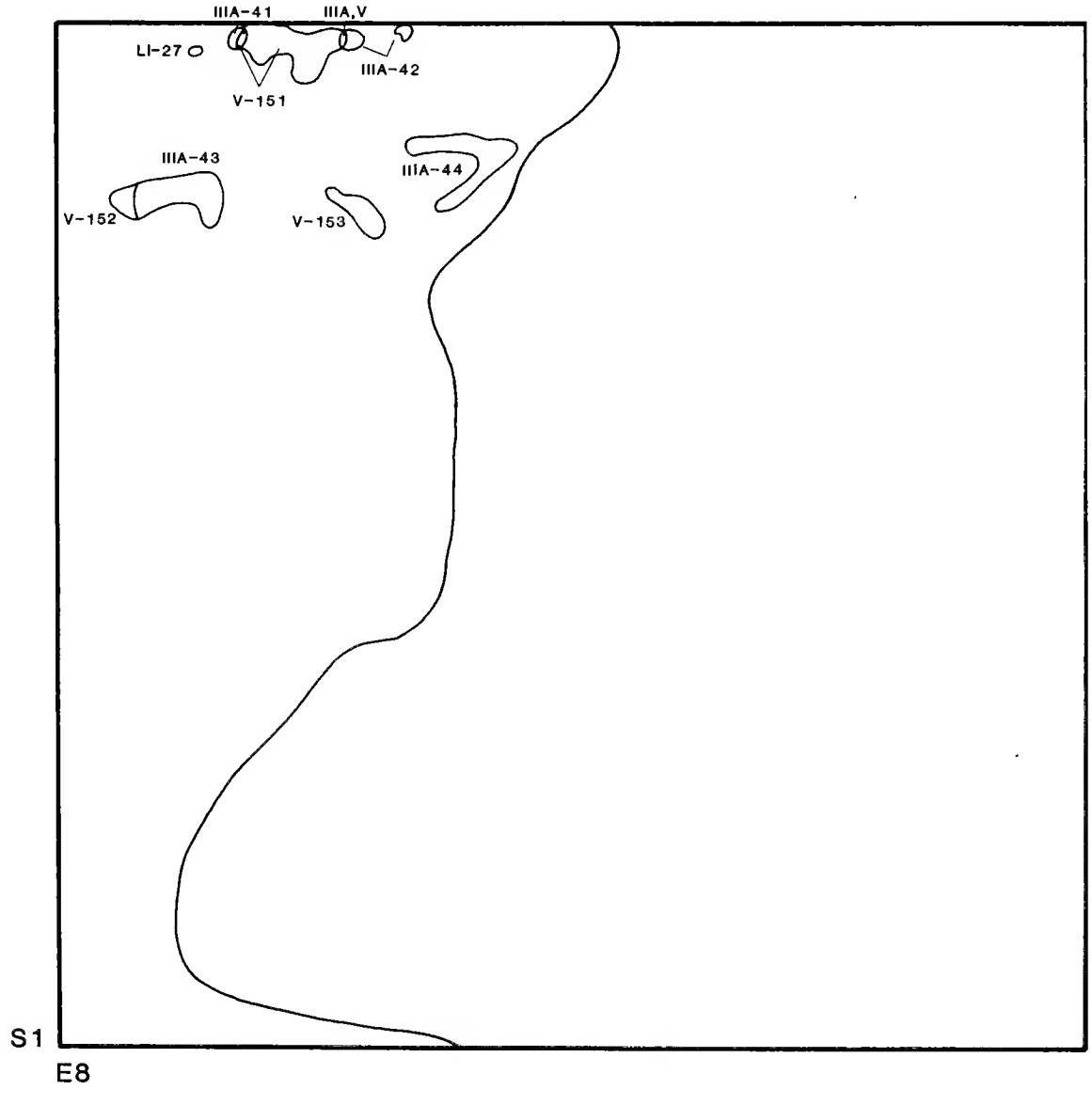

V-229
IIIA-95
V-230
IV-31
IV-32
IV-33
IV-34
V-233
IV-35
IIIA-97
IV-38
V-238
IIIA-99
IIIA-100
IIIA-98
V-235
V-234
V-241
IIIA-
104
V-231
IV-36
V-236
V-242
V-232
LI-39
V-243
S1
E3


V-250
LI-43
IV-43
IV-44
V-253
IIIA-96
IIIA-101
IV-37
V-237
IIIA-105
V-254
IIIA,IV
IV,V
IIIA
IIIA-102
IV-39
V-239
IIIA-106
V-240
IV
IV,V
IIIA-103
IV-39
V-239
V-255
IIIA-104
IV-40
V-256
LI-39
V-243
IV-41
V-244
V-257
IIIA-109
IV-45
S1
E4


LI
EI,LI
EI-3
LI-9
V-90
LI-7
IV-5
V-67
IV-4
LI
LI,V
IIIA-28
V-108
V
LI-21
V
V
IIIA
IIIA
V-109
IIIA-24
IIIA-21
V-88
IIIA-19
V-89
LI
LI-8
II-5
IIIA
V-113
V-85
LI-20
IIIA-20
IIIA-33
IIIA-24
V-68
V-
114
LI-22
V-121
EI-7
LI-22
LI-22
IIIA-33
S1
E5


IIIA-22
V-95
LI-11
IIIA-23
EI-8
IIIA-27
V-102
LI-18
IIIA
IIIA
IV-8
IIIA-24
LI-49
NO ARTIFACTS
LI,V
V-107
LI-17
NO ARTIFACTS
II-7
IIIA,IV
NO ARTIFACTS
IIIA-24
IIIA
V-111
IIIA
IV-7
IV-7
IIIA-29
IIIA-24
IIIA-24
V-110
II-8
IIIA
V-109
IIIA
V-112
IV-8
IIIA-31
V-115
IIIA-24
IIIA-31
IIIA,IV,V
IIIA
V-116
IIIA
IV-9
IV-29
IIIA
V-116
IIIA-24
V-117
IIIA-30
V-118
S1
E6


V-147
IIIA-38
V
V-148
IIIA-39
V
IIIA-92
V-149
V-154
V-120
IIIA-46
V
V-156
V-118
V-119
IIIA-45
V-155
V-158
IIIA-54
S1
E7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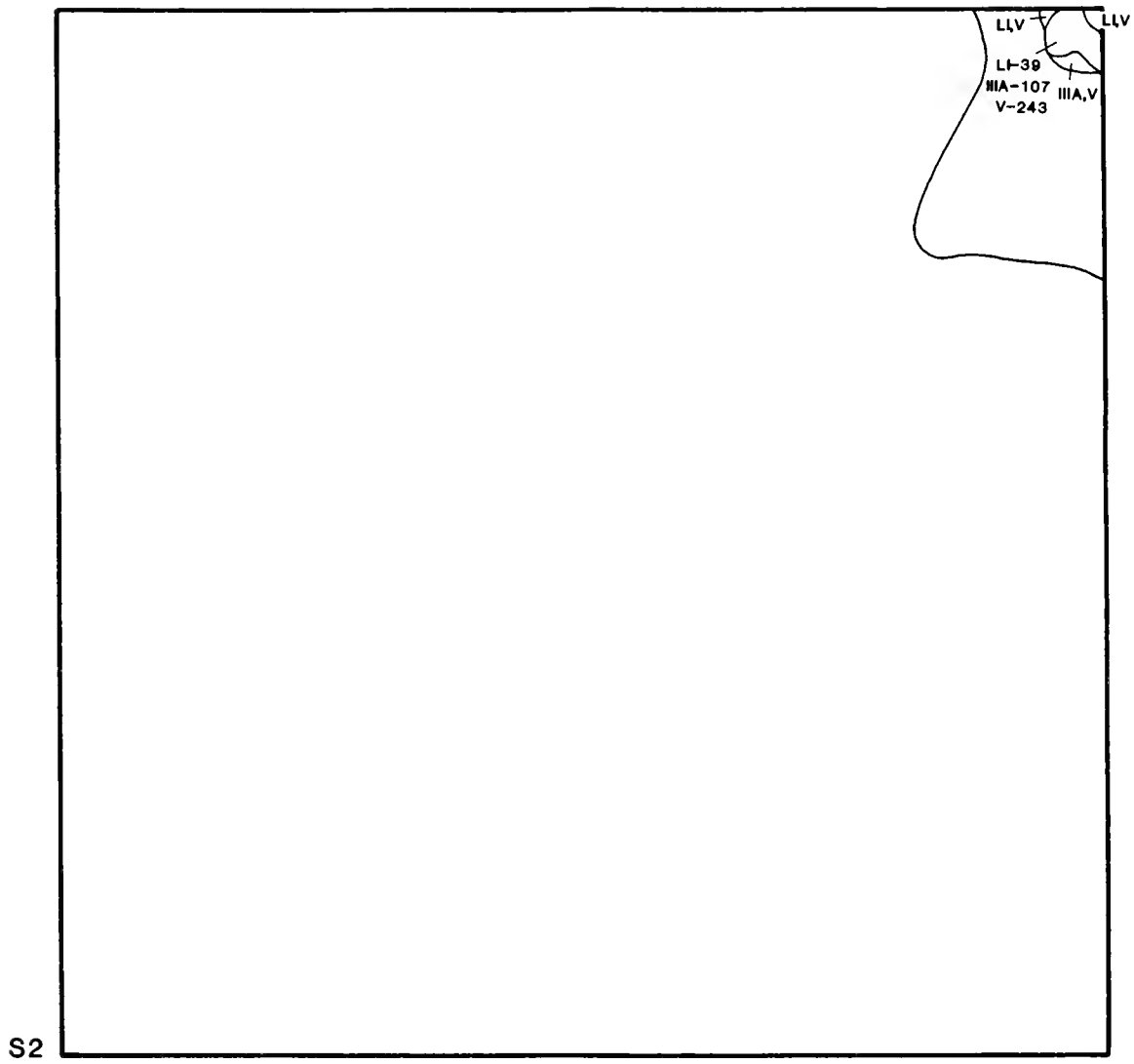
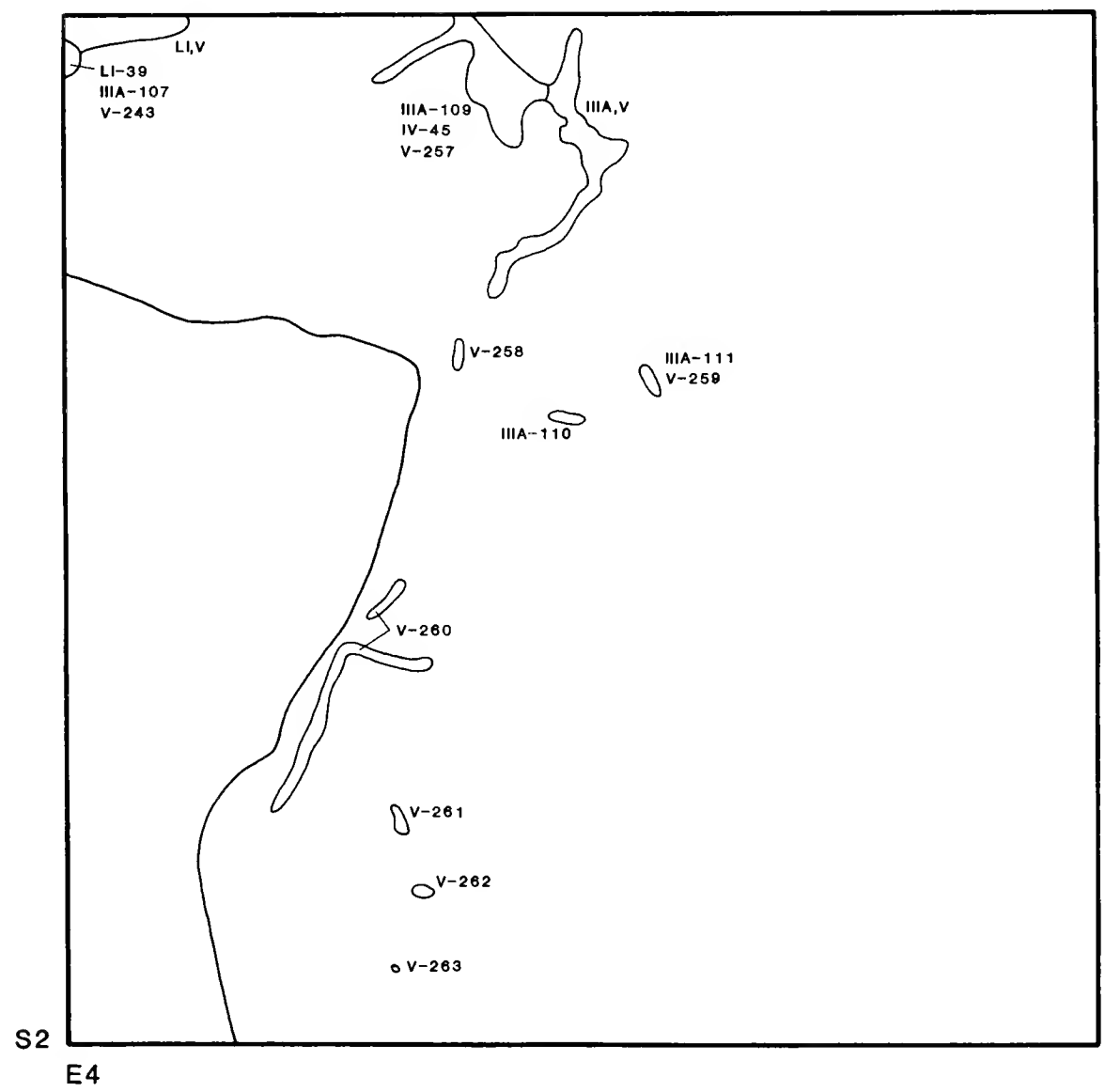
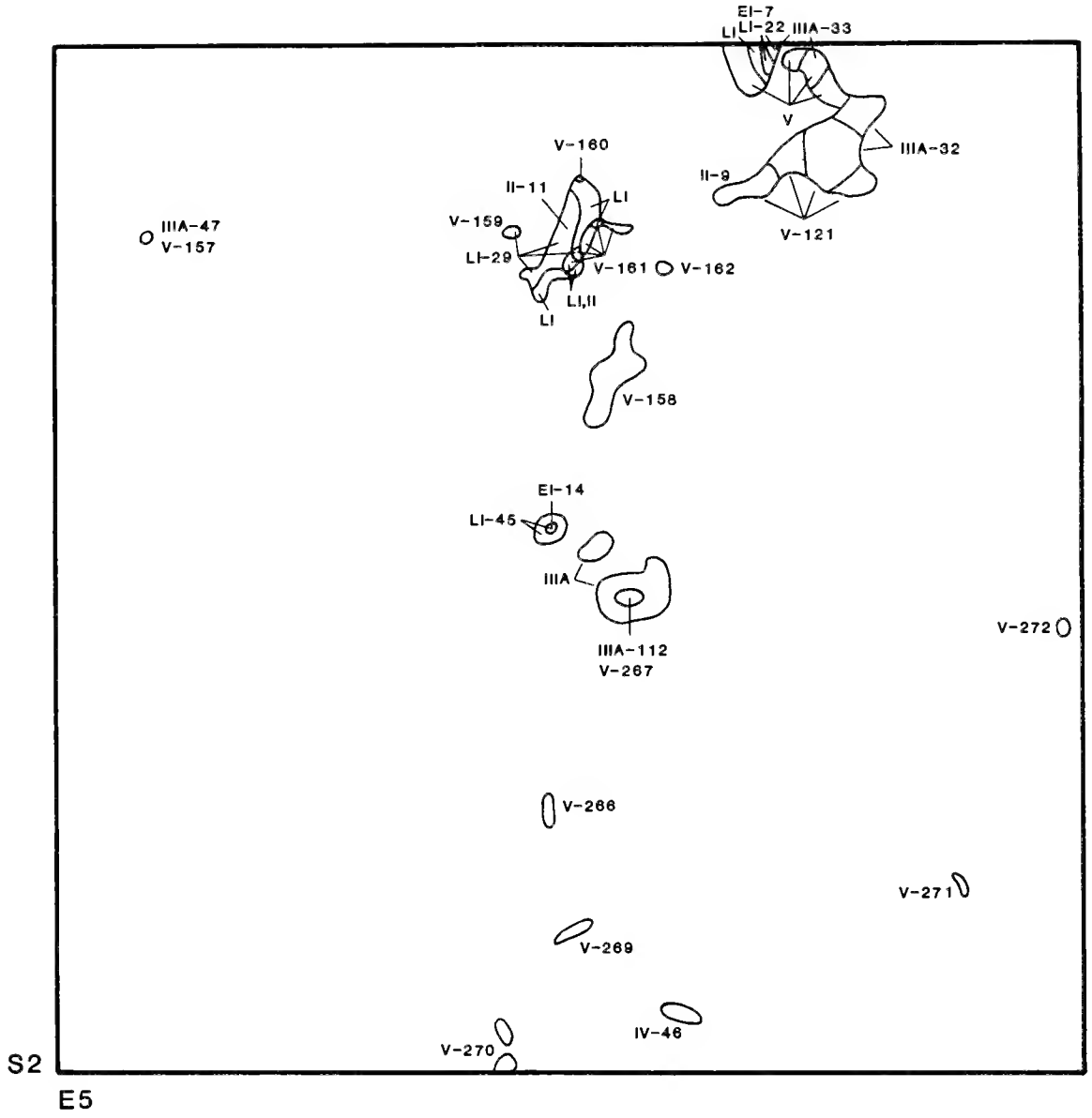
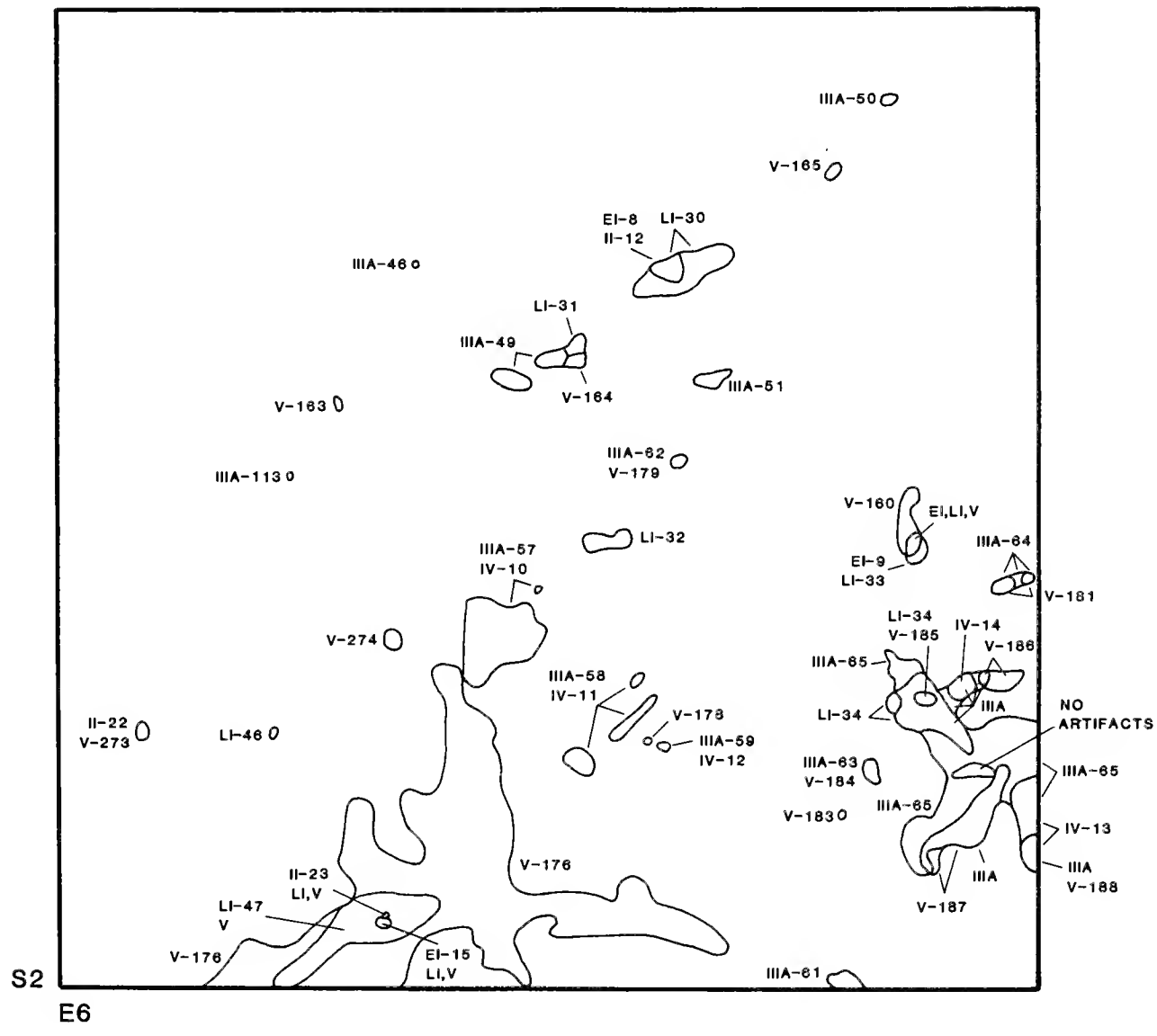
IIIA,V
LI-27
IIIA-42
V-151
IIIA-43
IIIA-44
V-152
V-153
S1
E8


LLV
LLV
LI-39
IIIA-107
V-243
IIIA,V
S2
E3


LI,V
LI-39
IIIA-107
V-243
IIIA-109
IV-45
V-257
IIIA,V
V-258
IIIA-111
V-259
IIIA-110
V-260
V-261
V-262
V-263
S2
E4


EI-7
LI
LI-22
IIIA-33
V
IIIA-32
II-9
V-121
V-160
II-11
LI
V-159
LI-29
V-161
V-162
LI,II
LI
IIIA-47
V-157
V-158
EI-14
LI-45
IIIA
IIIA-112
V-267
V-272
V-266
V-271
V-269
IV-46
V-270
S2
E5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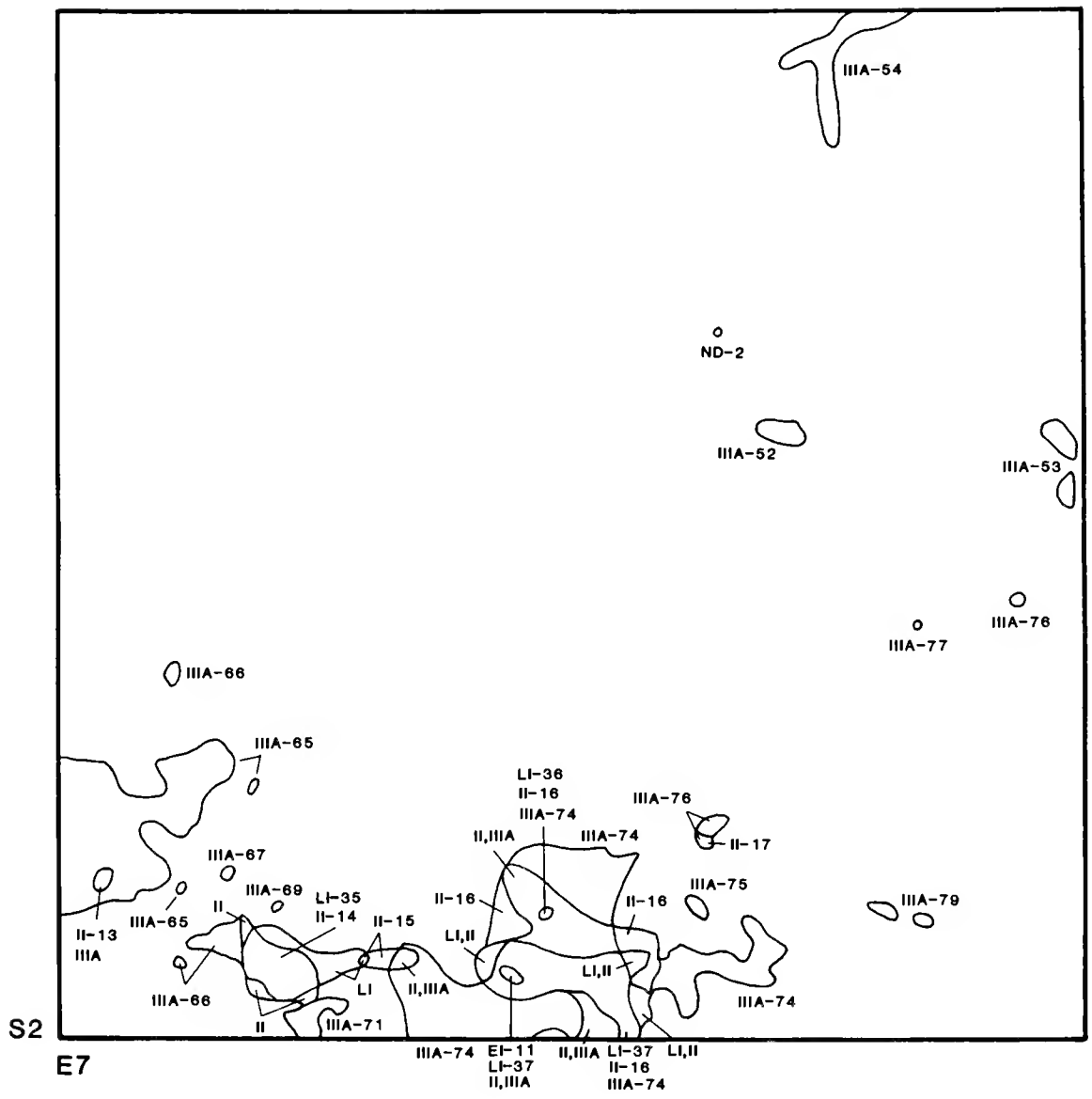
V-165
EI-8
LI-30
II-12
IIIA-46
LI-31
IIIA-49
V-164
IIIA-51
V-163
IIIA-62
V-179
IIIA-113
V-160
EI,LI,V
IIIA-64
EI-9
LI-33
V-181
LI-32
IIIA-57
IV-10
V-274
LI-34
V-185
IV-14
V-186
IIIA-65
IIIA-58
IV-11
V-178
IIIA-59
IV-12
II-22
V-273
LI-46
LI-34
IIIA
NO
ARTIFACTS
IIIA-63
V-184
IIIA-65
V-183
IIIA-65
IV-13
IIIA
V-188
V-187
V-176
II-23
LI,V
LI-47
V
V-176
EI-15
LI,V
IIIA-61
S2
E6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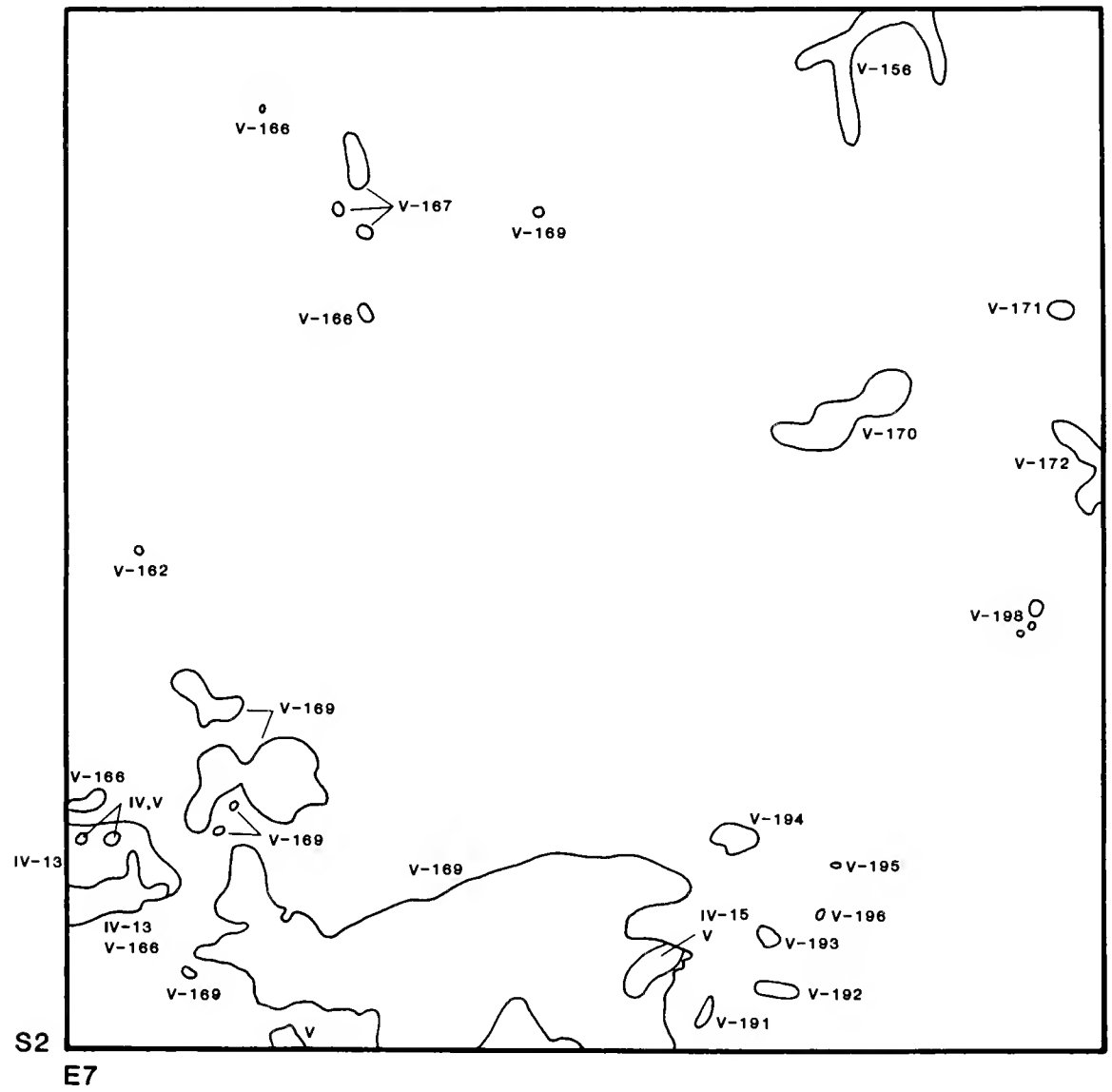
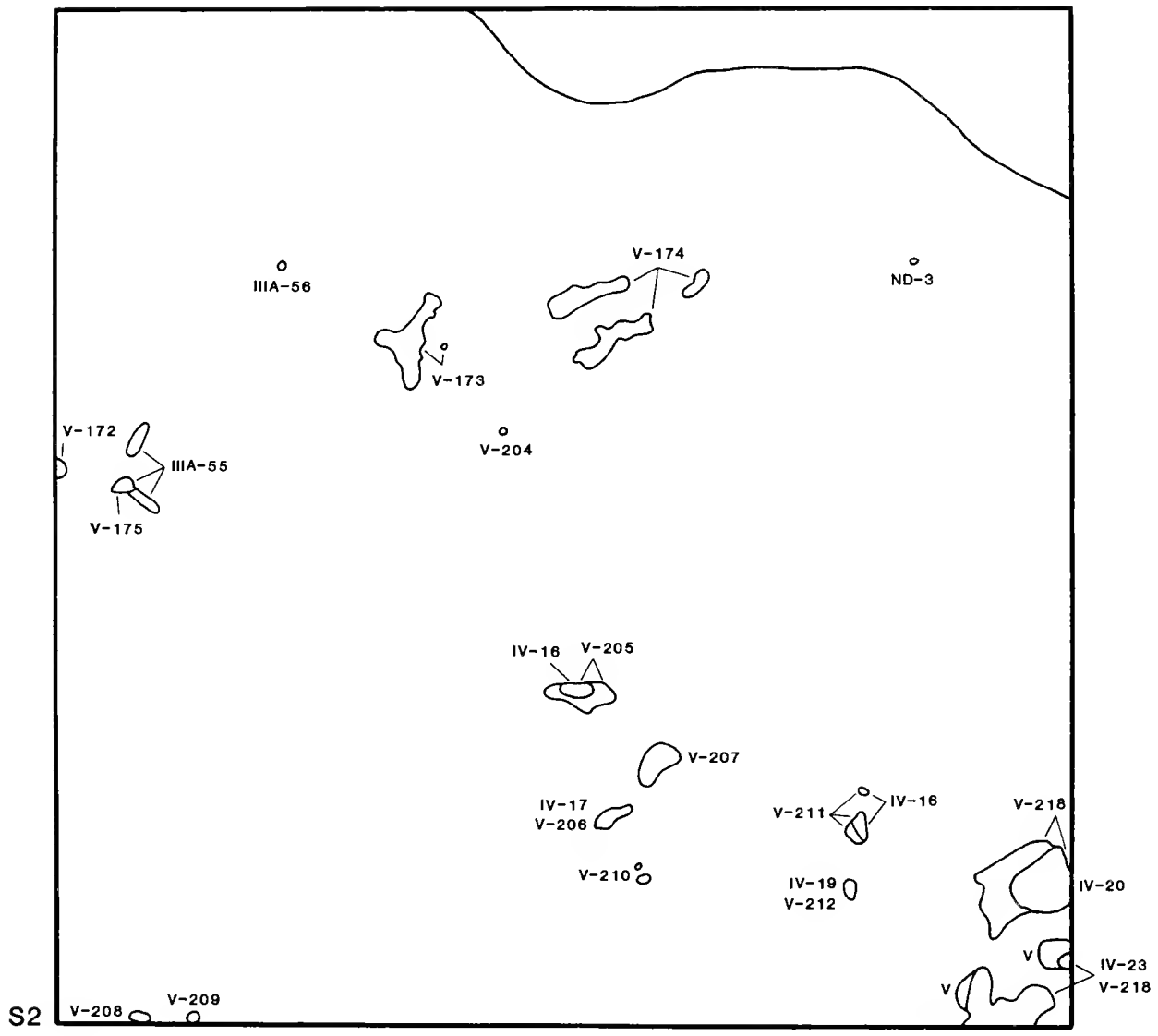
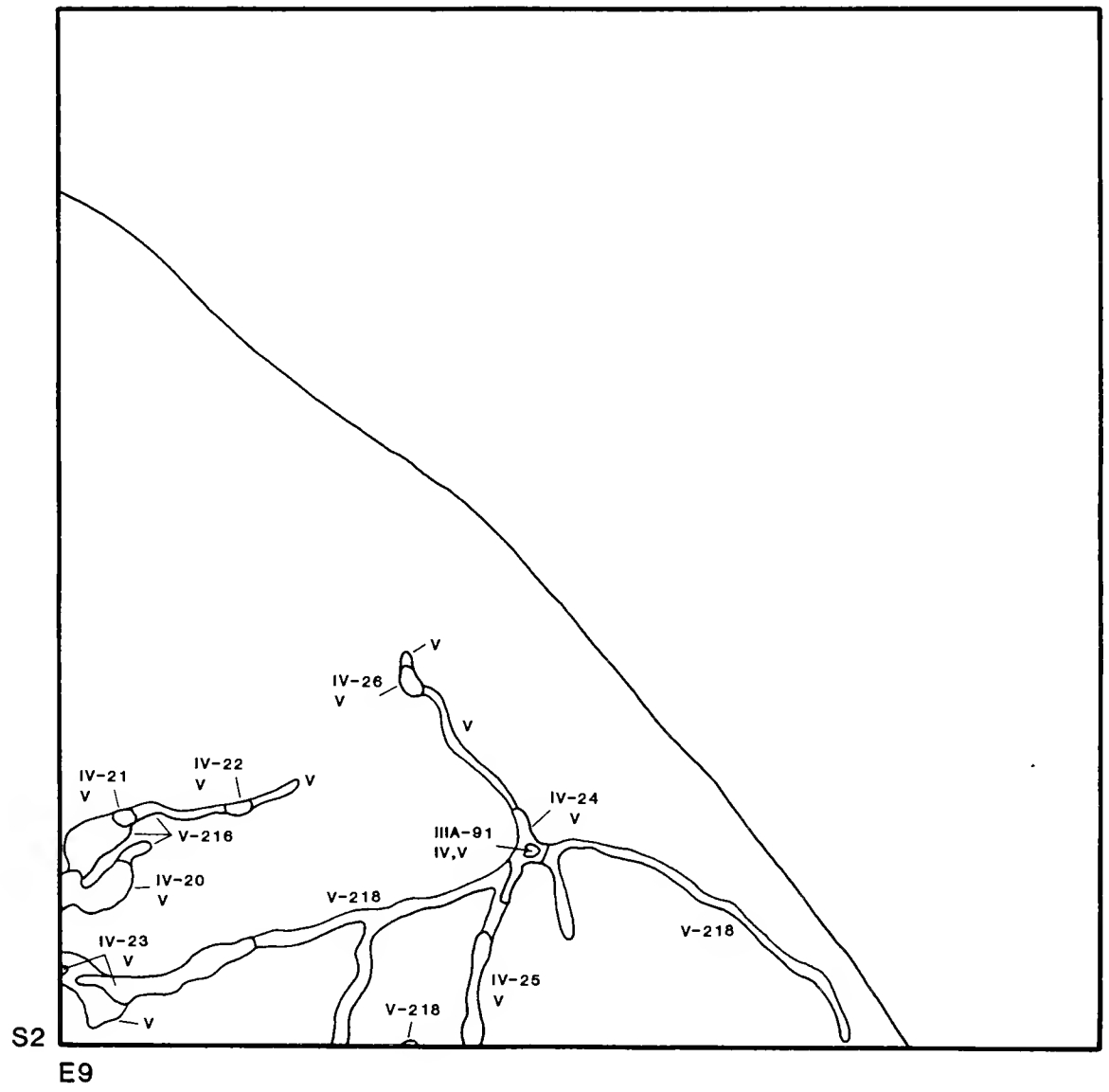
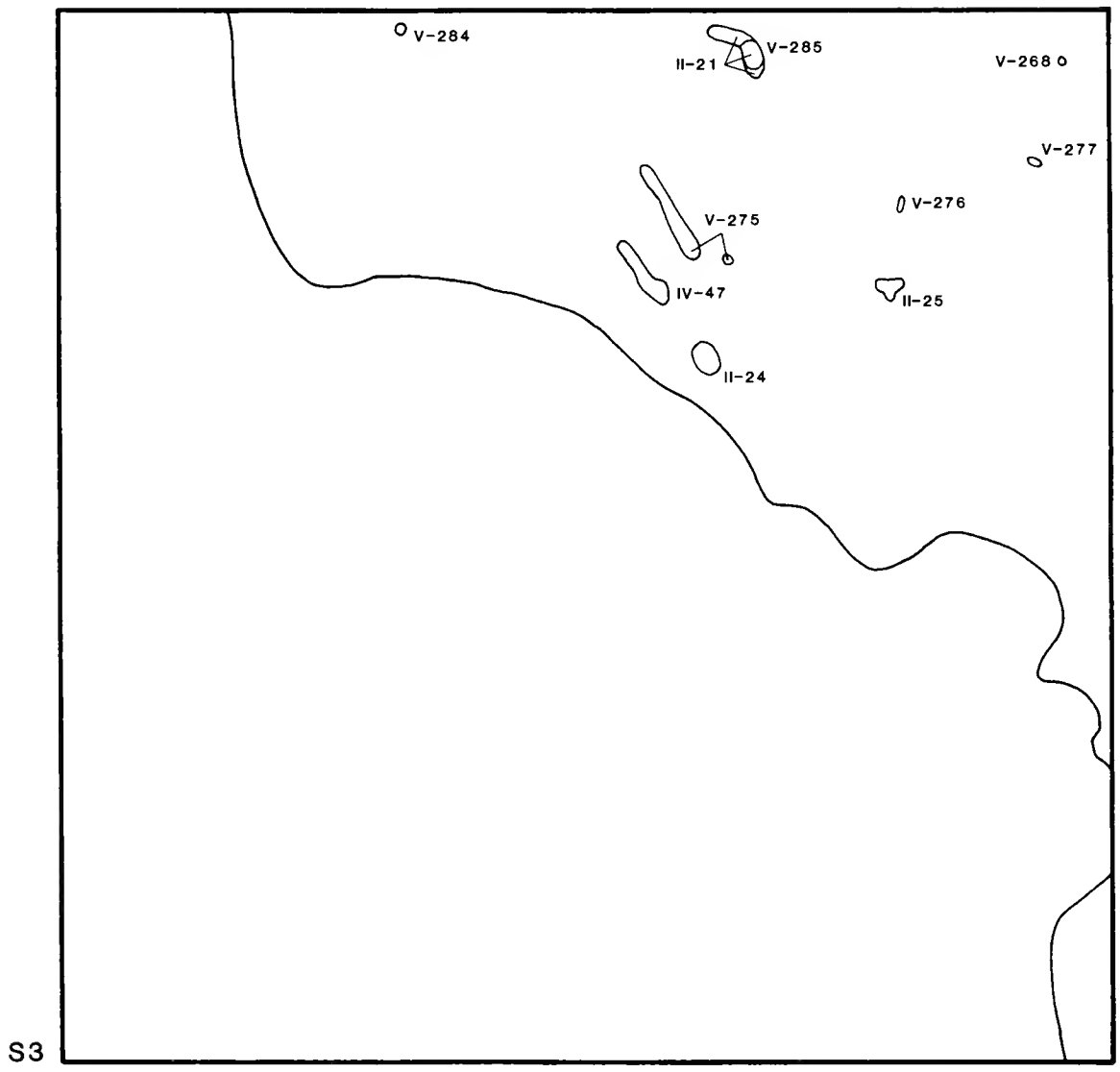
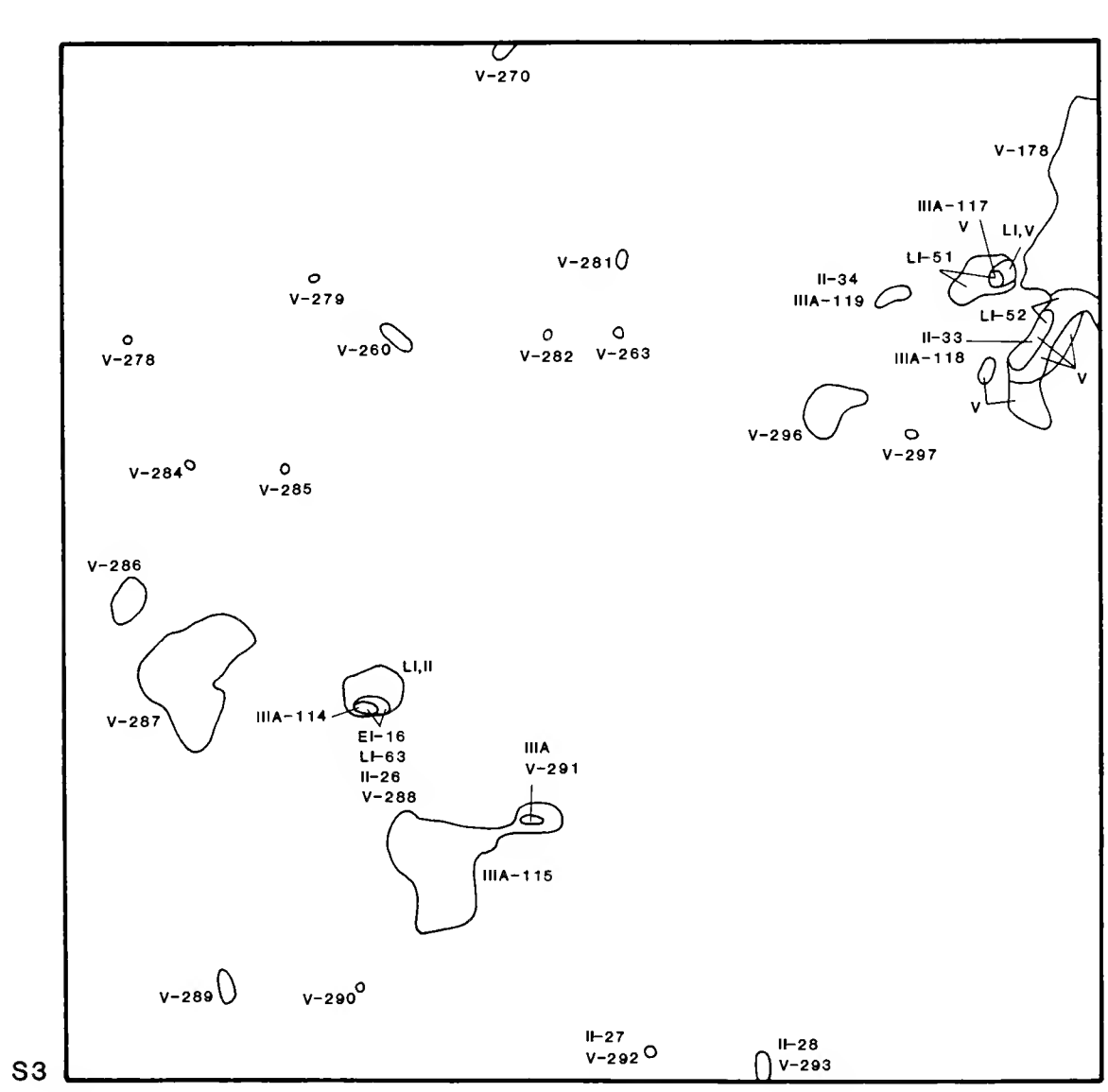
ND-2
IIIA-52
IIIA-53
IIIA-76
IIIA-77
IIIA-66
IIIA-65
LI-36
II-16
IIIA-74
IIIA-76
II-17
II,IIIA
IIIA-74
IIIA-67
IIIA-69
LI-35
II-14
II-15
II-16
II-16
IIIA-75
IIIA-79
II
IIIA-65
II-13
IIIA
LI,II
LI,II
IIIA-66
LI
II,IIIA
IIIA-74
II
IIIA-71
IIIA-74
EI-11
LI-37
II,IIIA
II,IIIA
LI-37
II-16
IIIA-74
LI,II
S2
E7

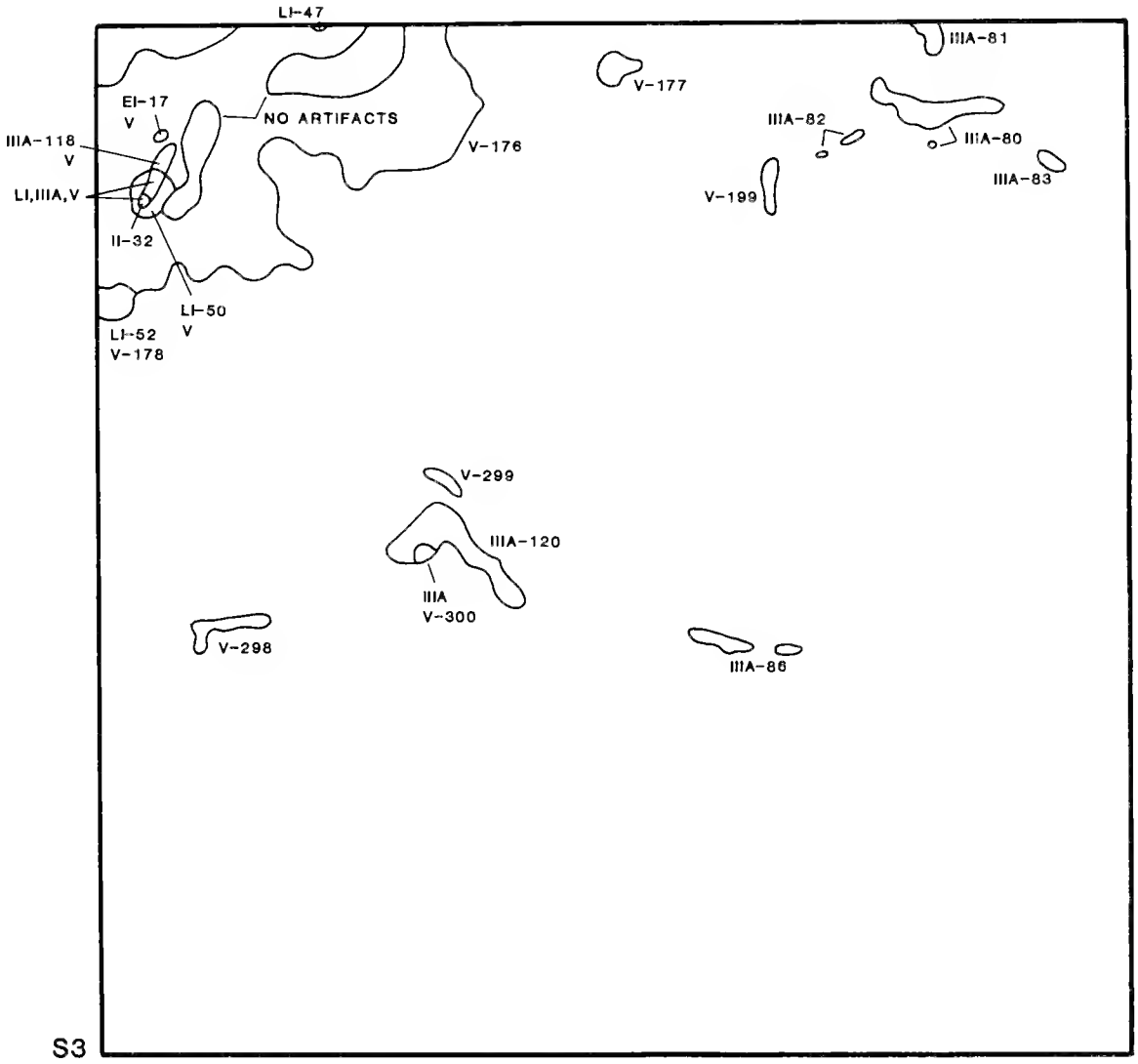

V-156
V-166
V-167
V-169
V-166
V-171
V-170
V-172
V-162
V-198
V-169
V-166
IV,V
V-169
V-194
IV-13
V-169
V-195
IV-15
V
V-196
V-193
IV-13
V-166
V-169
V-192
V-191
V
S2
E7

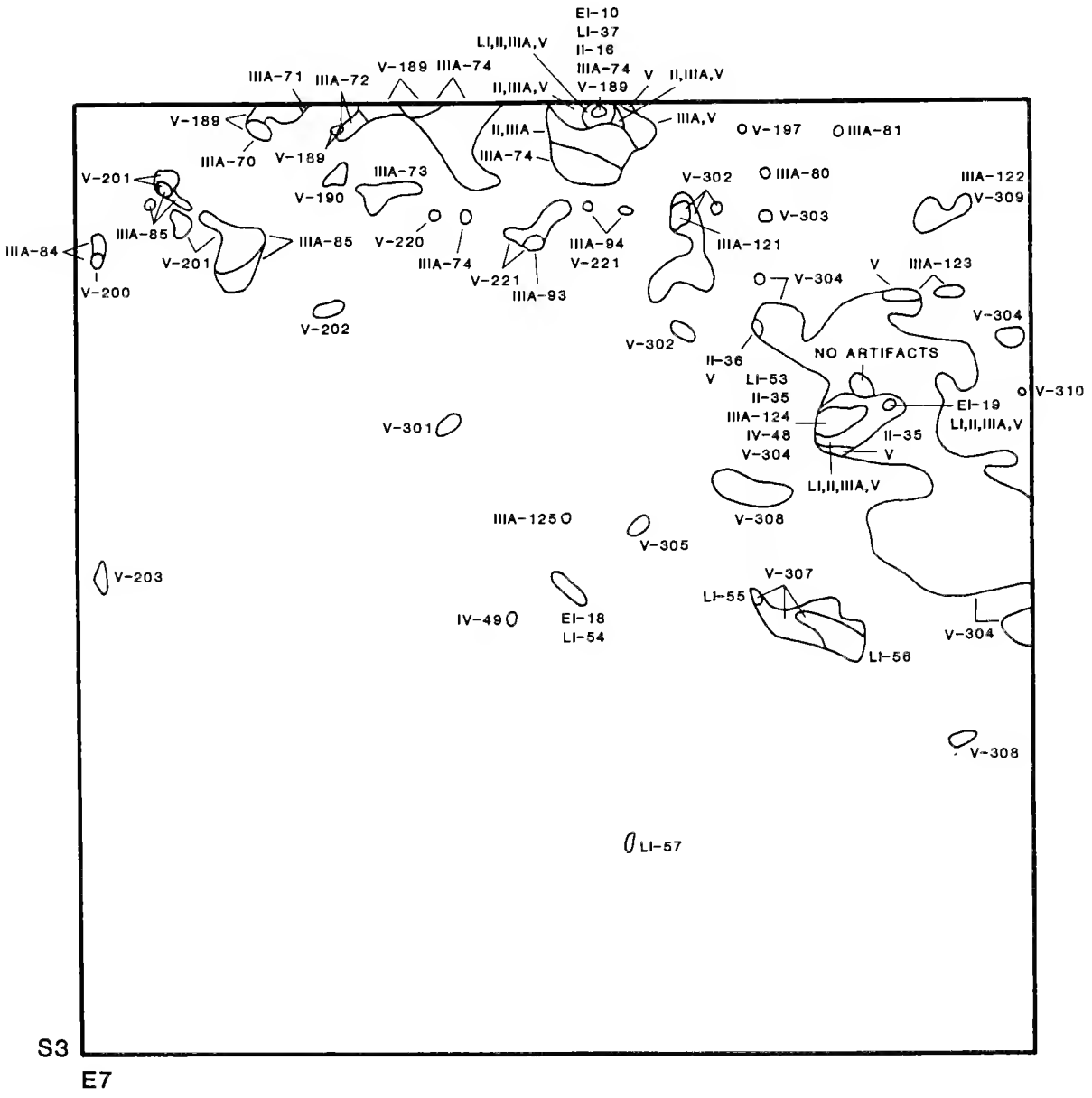

IIIA-56
V-174
ND-3
V-173
V-172
IIIA-55
V-204
V-175
IV-16
V-205
V-207
IV-17
V-206
V-211
IV-16
V-218
V-210
IV-19
V-212
IV-20
V
IV-23
V-218
V
V-208
V-209
S2
E8

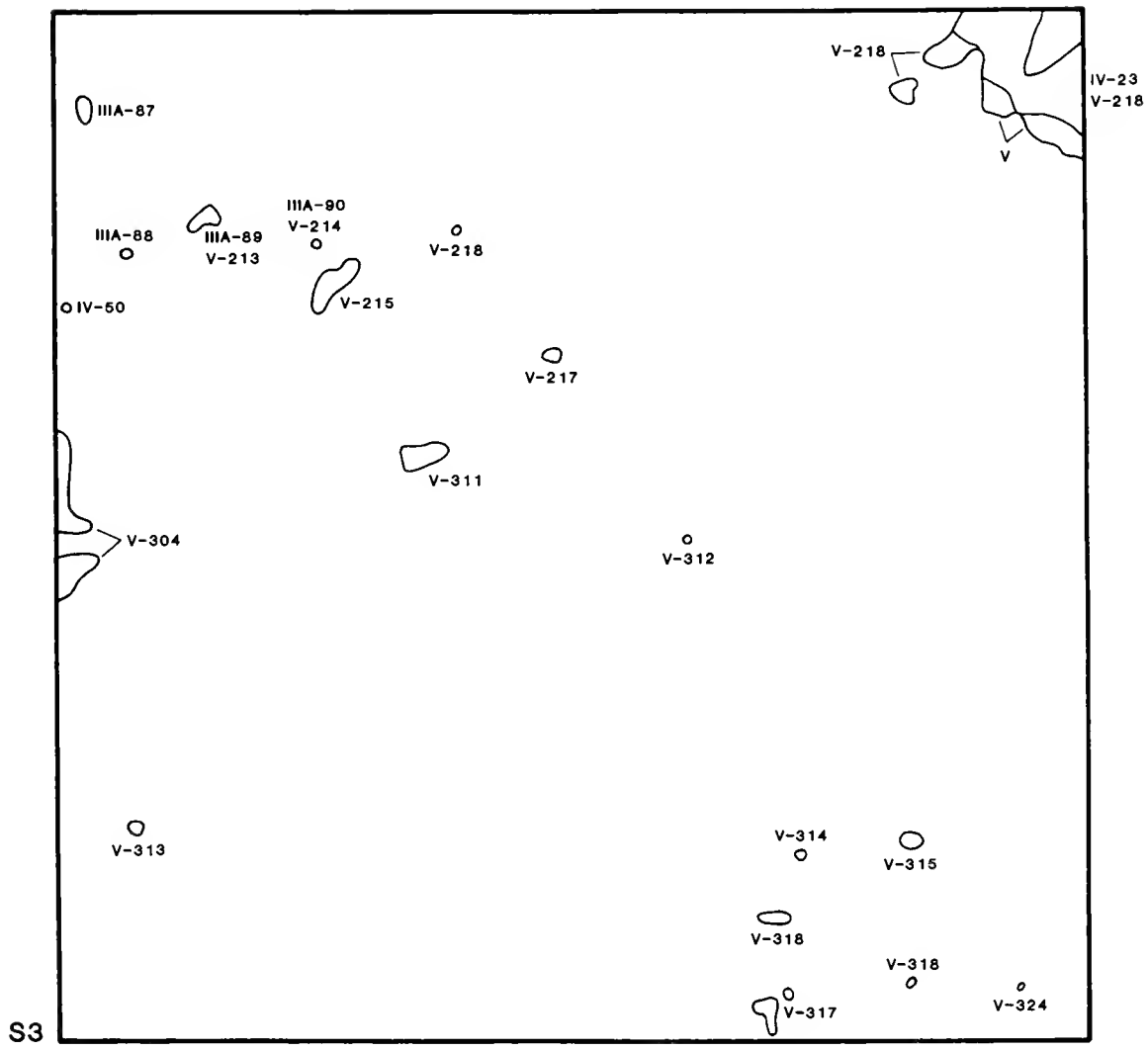

V
IV-26
V
V
IV-21
V
IV-22
V
V
IV-24
V
V-216
IIIA-91
IV,V
IV-20
V
V-218
V-218
IV-23
V
V
IV-25
V
V-218
S2
E9

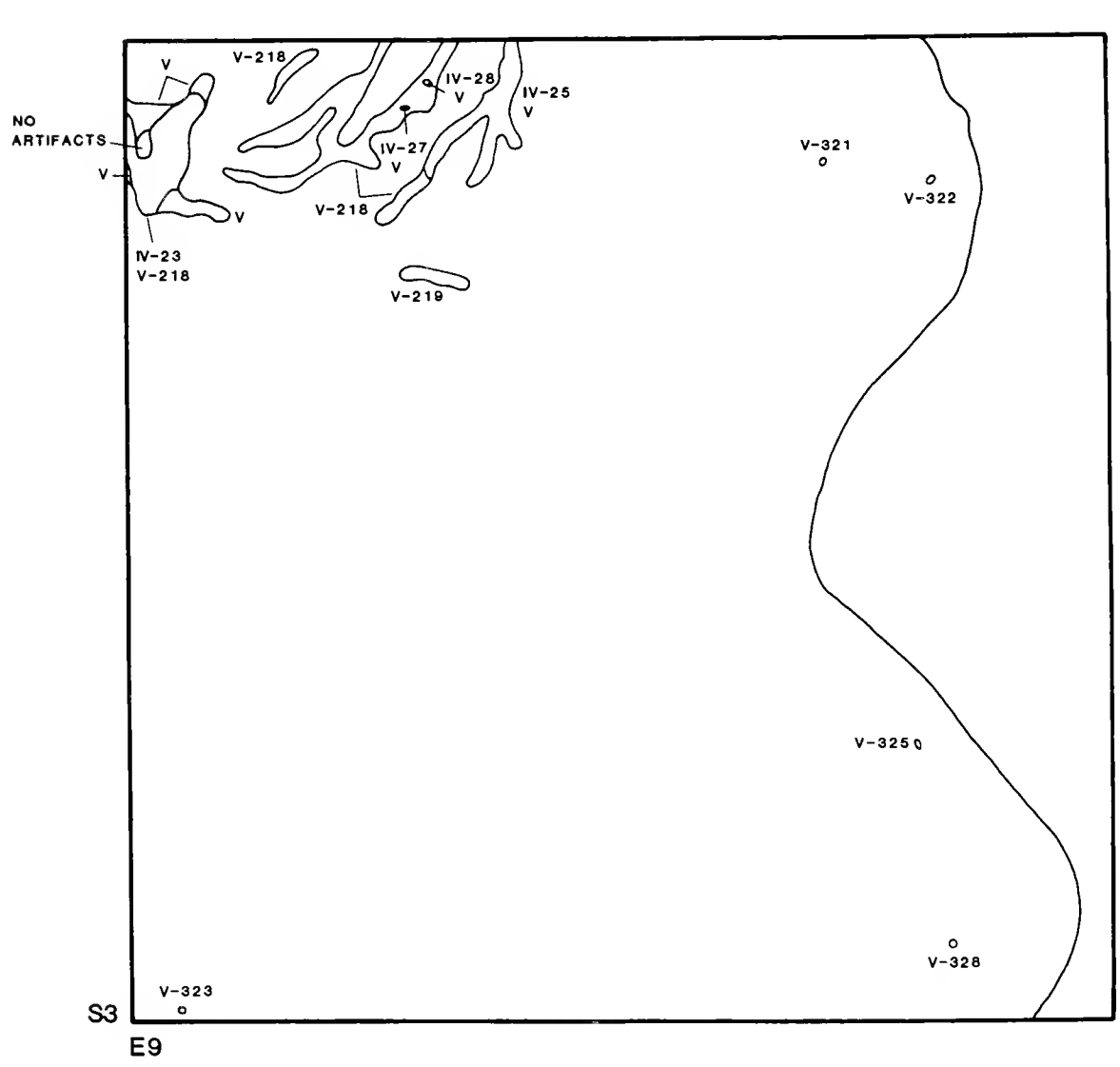

V-284
II-21
V-285
V-268
V-277
V-276
V-275
IV-47
II-25
II-24
S3
E4

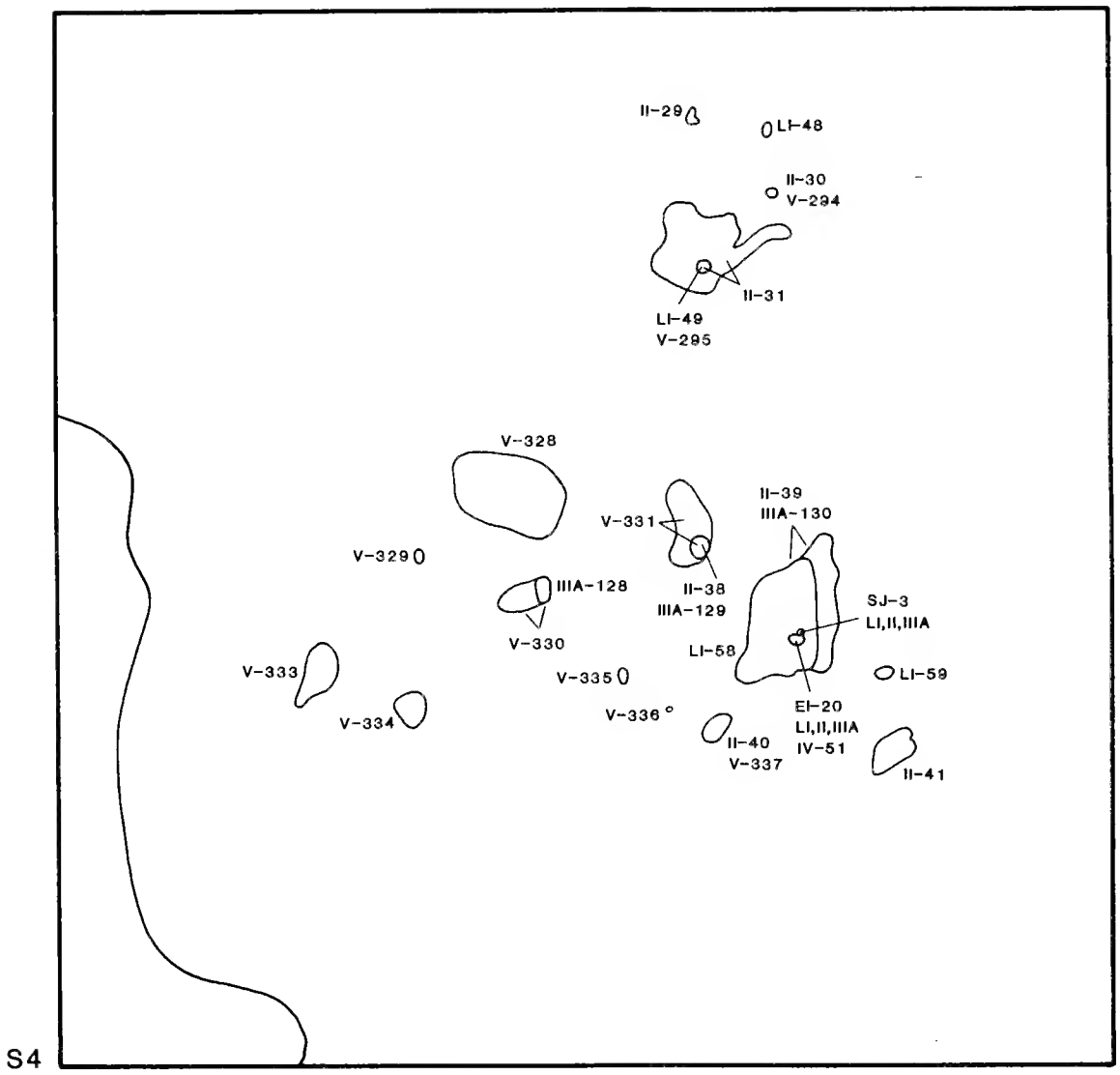

V-270
V-178
IIIA-117
V
LI,V
LI-51
V-281
V-279
II-34
IIIA-119
LI-52
II-33
IIIA-118
V-278
V-260
V-282
V-263
V-296
V-297
V-284
V-285
V-286
V-287
LI,II
IIIA-114
EI-16
LI-63
II-26
V-288
IIIA
V-291
IIIA-115
V-289
V-290
II-27
V-292
II-28
V-293
S3
E5

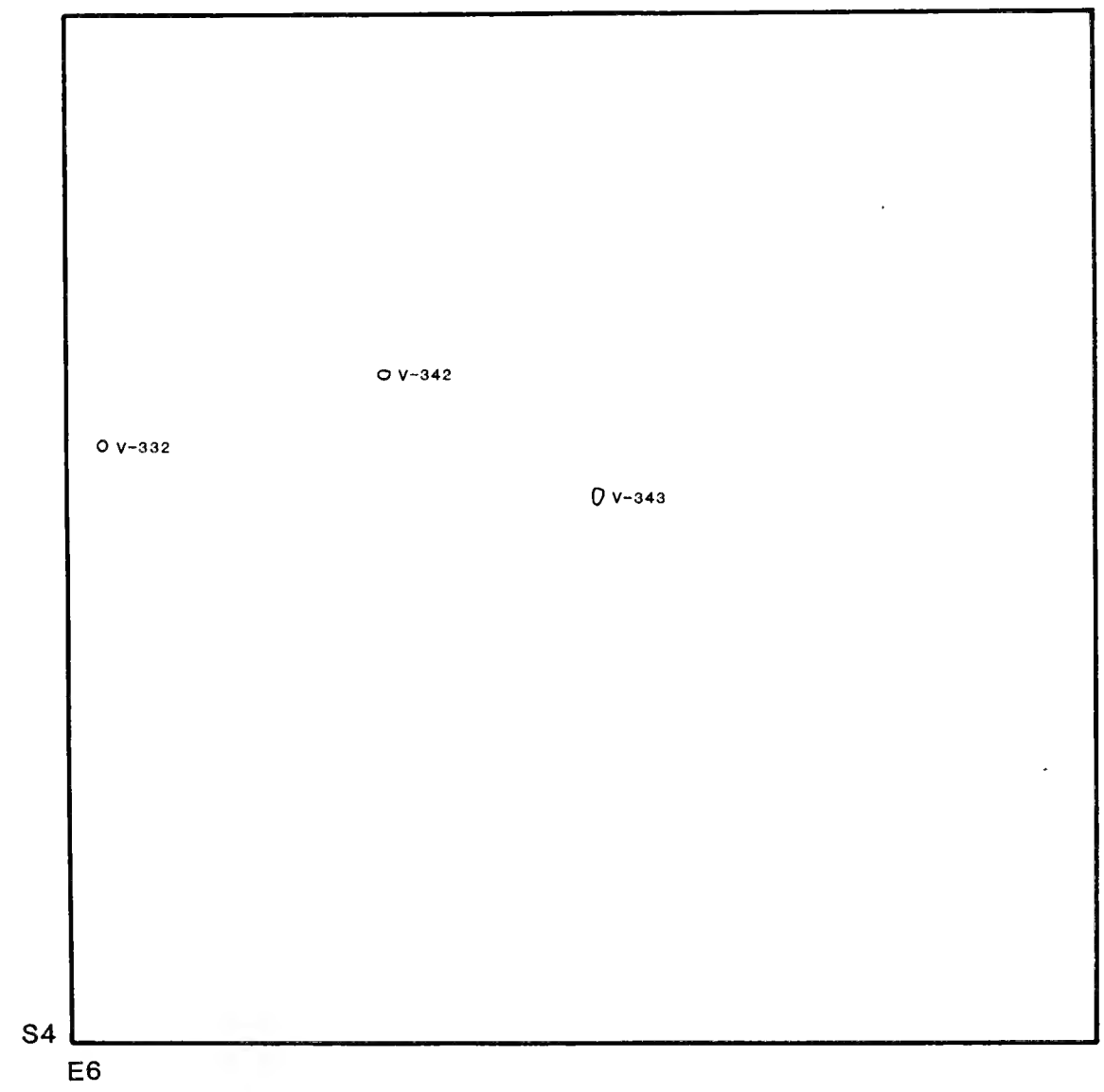

LI-47
EI-17
V
NO ARTIFACTS
IIIA-118
V
LI,IIIA,V
II-32
LI-50
V
LI-52
V-178
V-176
V-177
IIIA-81
IIIA-82
IIIA-80
IIIA-83
V-199
V-299
IIIA-120
IIIA
V-300
V-298
IIIA-86
S3
E6

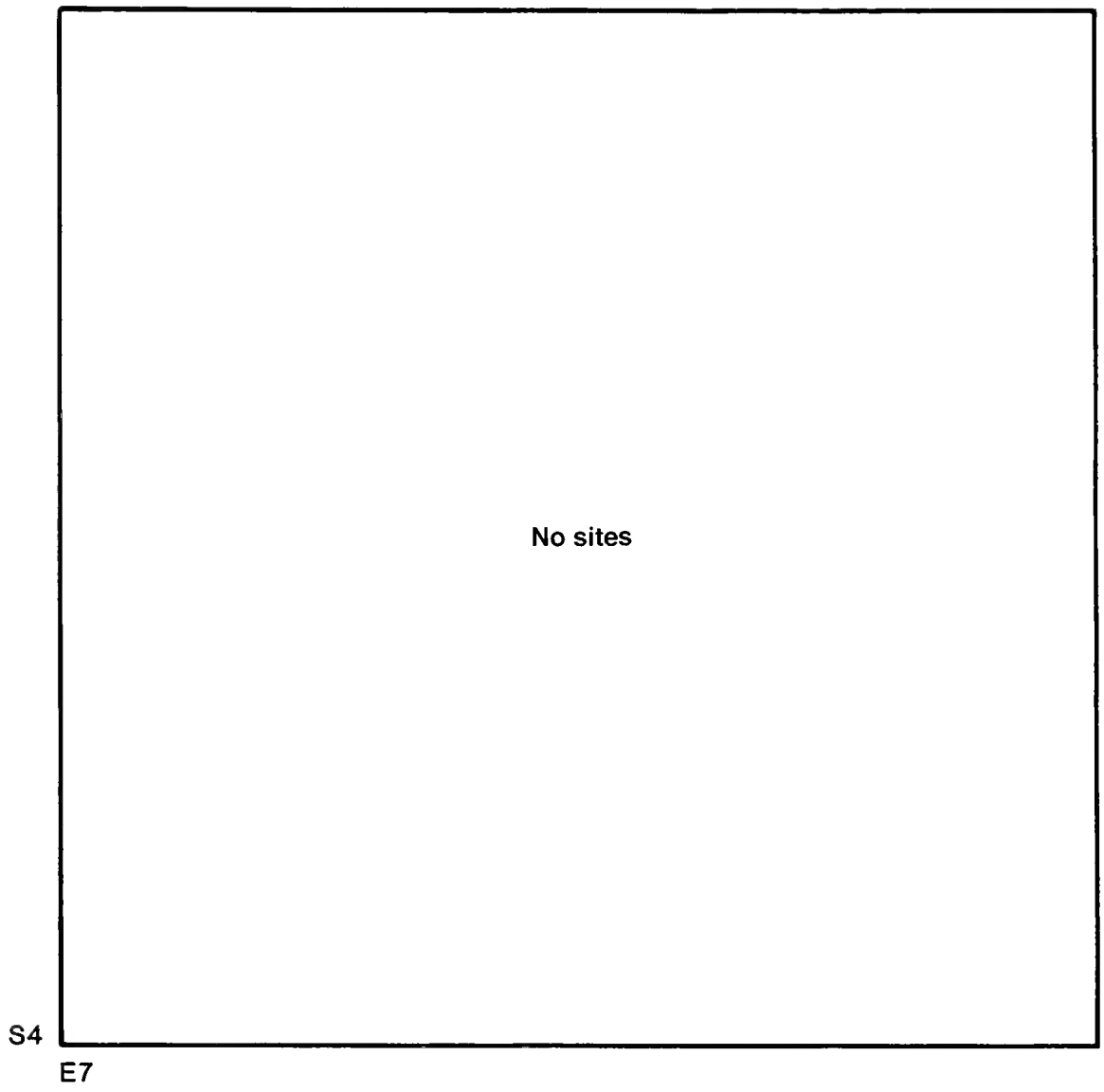

EI-10
LI-37
II-16
IIIA-74
V
II,IIIA,V
LI,II,IIIA,V
V-189
IIIA-71
IIIA-72
V-189
IIIA-74
II,IIIA,V
V-189
IIIA,V
II,IIIA
IIIA-74
V-197
IIIA-81
V-189
IIIA-70
V-189
IIIA-73
V-201
V-190
V-302
IIIA-80
IIIA-122
V-309
V-303
IIIA-85
IIIA-84
IIIA-85
V-220
IIIA-94
IIIA-121
V-201
IIIA-74
V-221
V-221
IIIA-93
V-200
V-304
V
IIIA-123
V-304
V-202
V-302
II-36
V
NO ARTIFACTS
LI-53
II-35
V-310
EI-19
IIIA-124
LI,II,IIIA,V
IV-48
II-35
V-304
V
V-301
LI,II,IIIA,V
V-308
IIIA-125
V-305
V-307
V-203
LI-55
IV-49
EI-18
LI-54
V-304
LI-56
V-308
LI-57
S3
E7

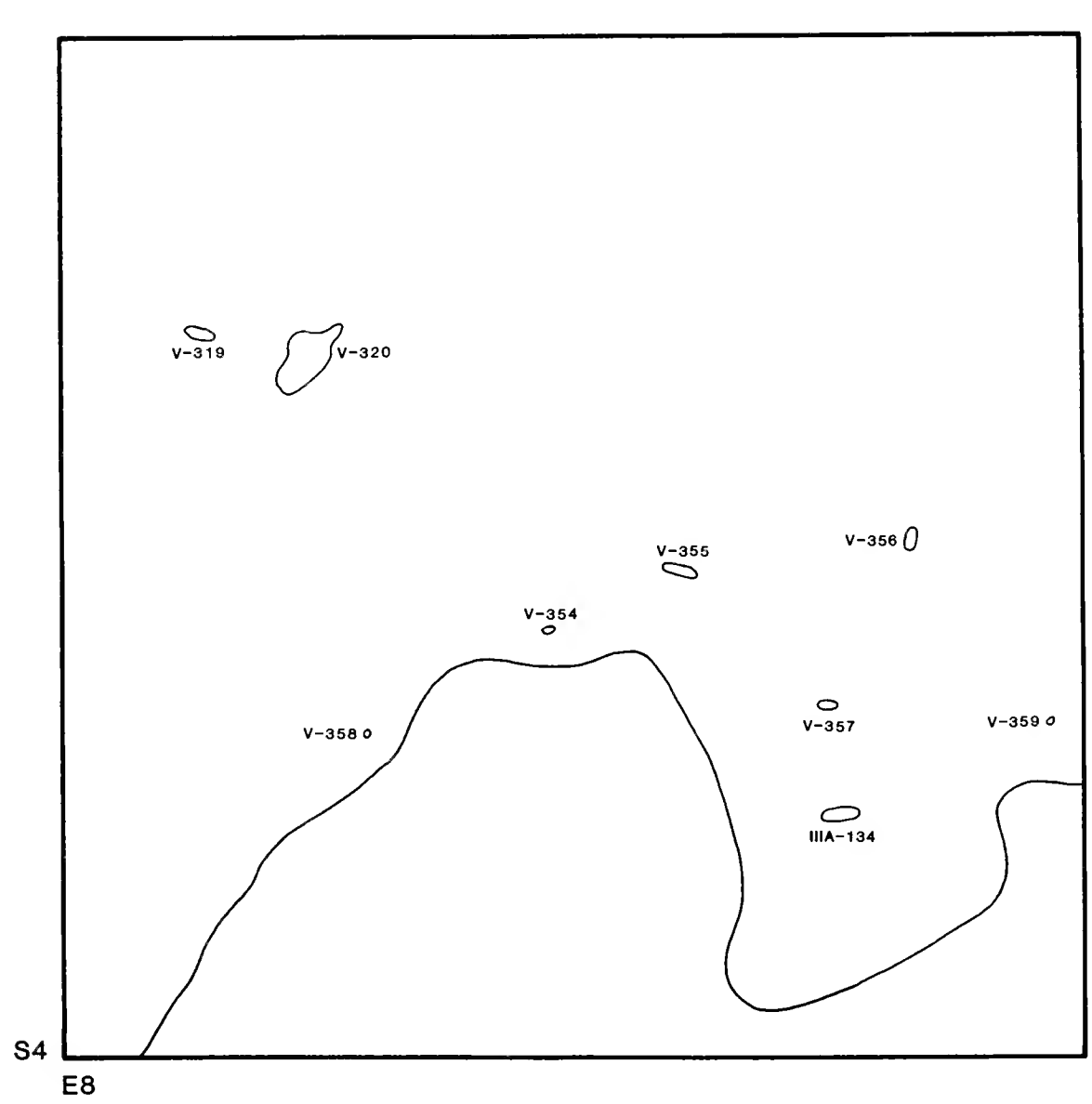

V-218
IV-23
V-218
V
IIIA-87
IIIA-90
V-214
IIIA-88
IIIA-89
V-213
V-218
IV-50
V-215
V-217
V-311
V-304
V-312
V-313
V-314
V-315
V-318
V-318
V-317
V-324
S3
E8

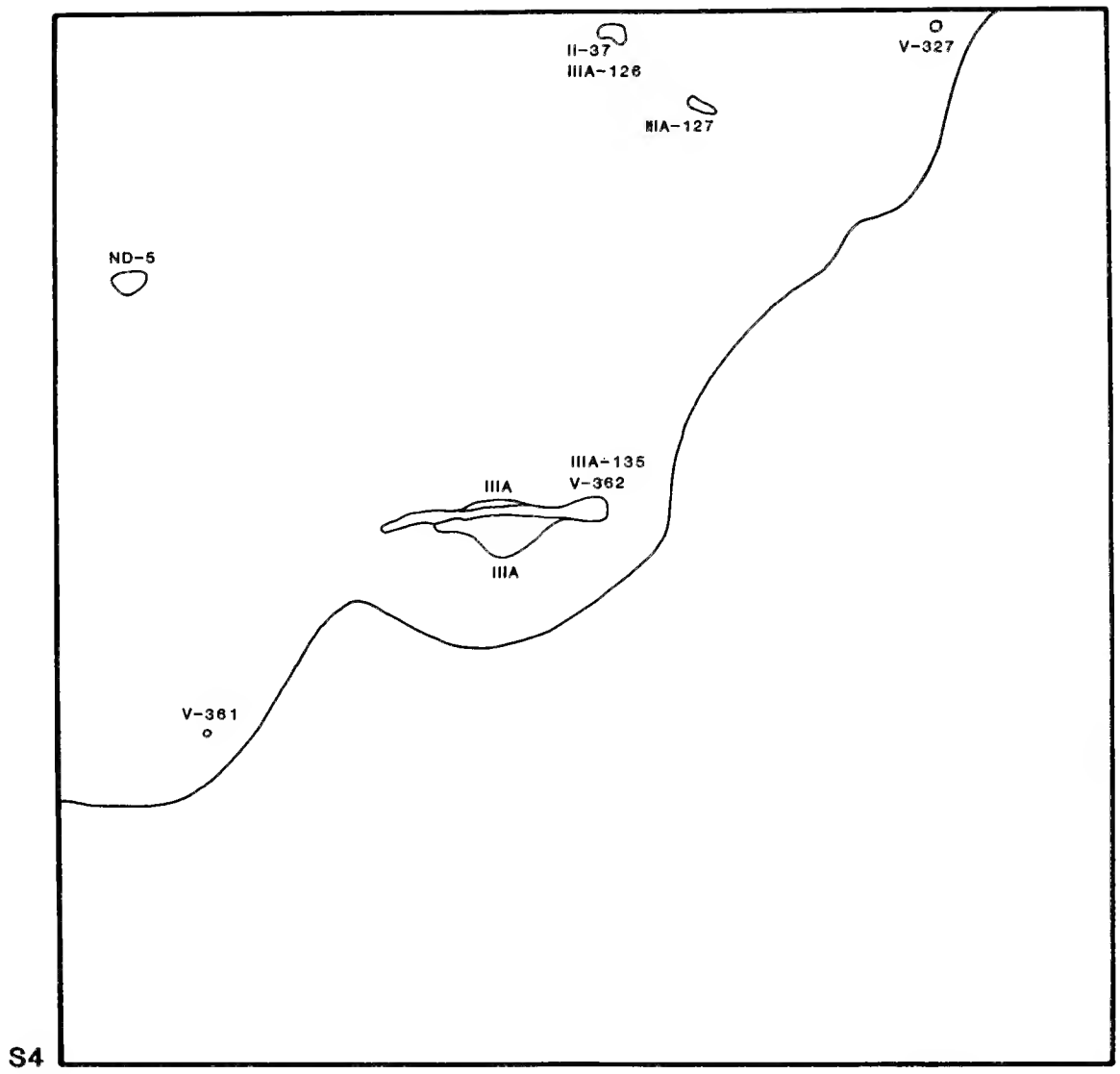

V
V-218
IV-28
V
IV-25
V
NO
ARTIFACTS
IV-27
V
V
V-218
V
IV-23
V-218
V-219
V-321
V-322
V-325
V-328
V-323
S3
E9

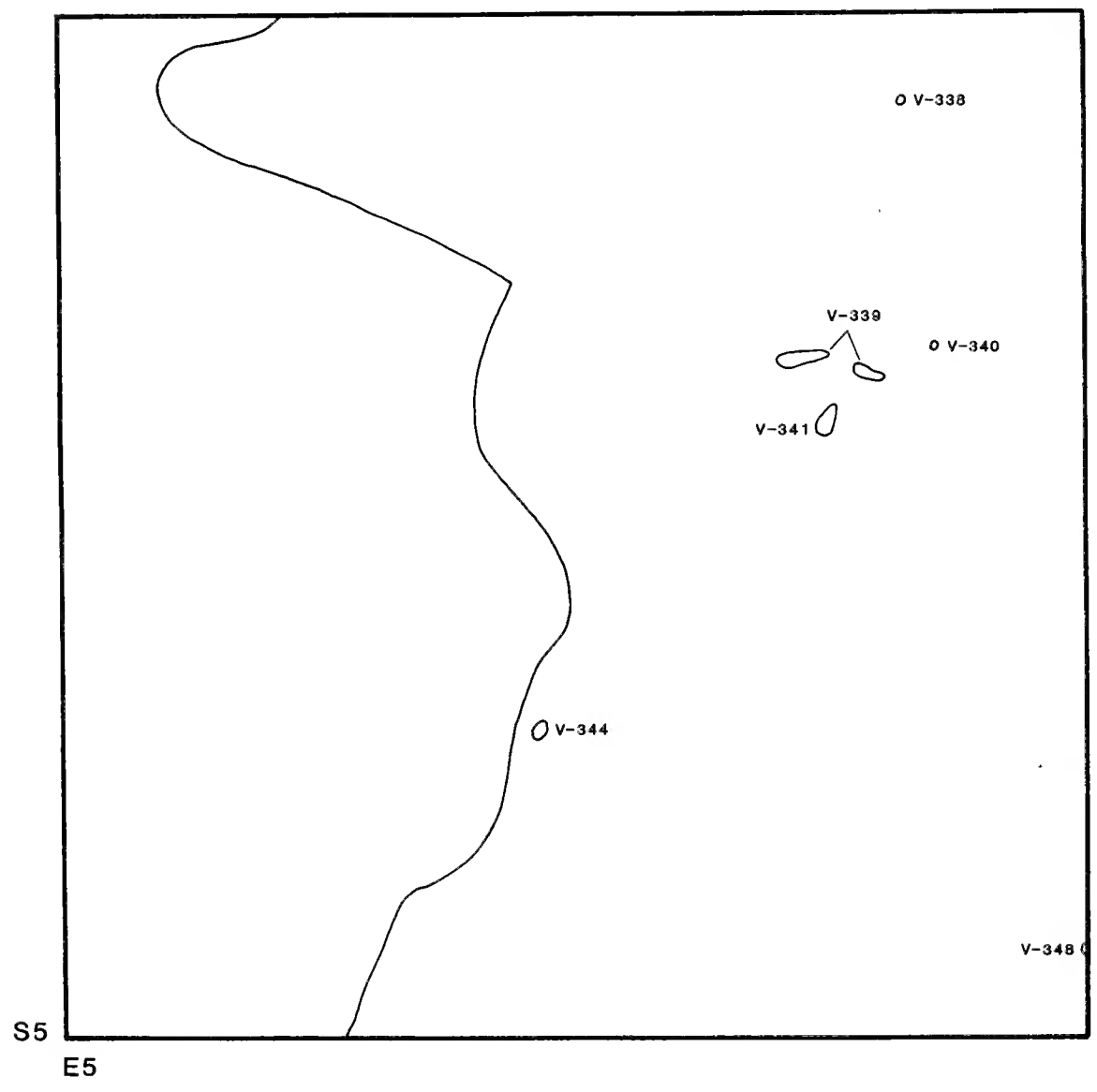

II-29
LI-48
II-30
V-294
II-31
LI-49
V-295
V-328
V-331
II-39
IIIA-130
V-329
IIIA-128
II-38
IIIA-129
SJ-3
LI,II,IIIA
V-330
LI-58
V-333
V-335
LI-59
V-336
EI-20
LI,II,IIIA
IV-51
V-334
II-40
V-337
II-41
S4
E5

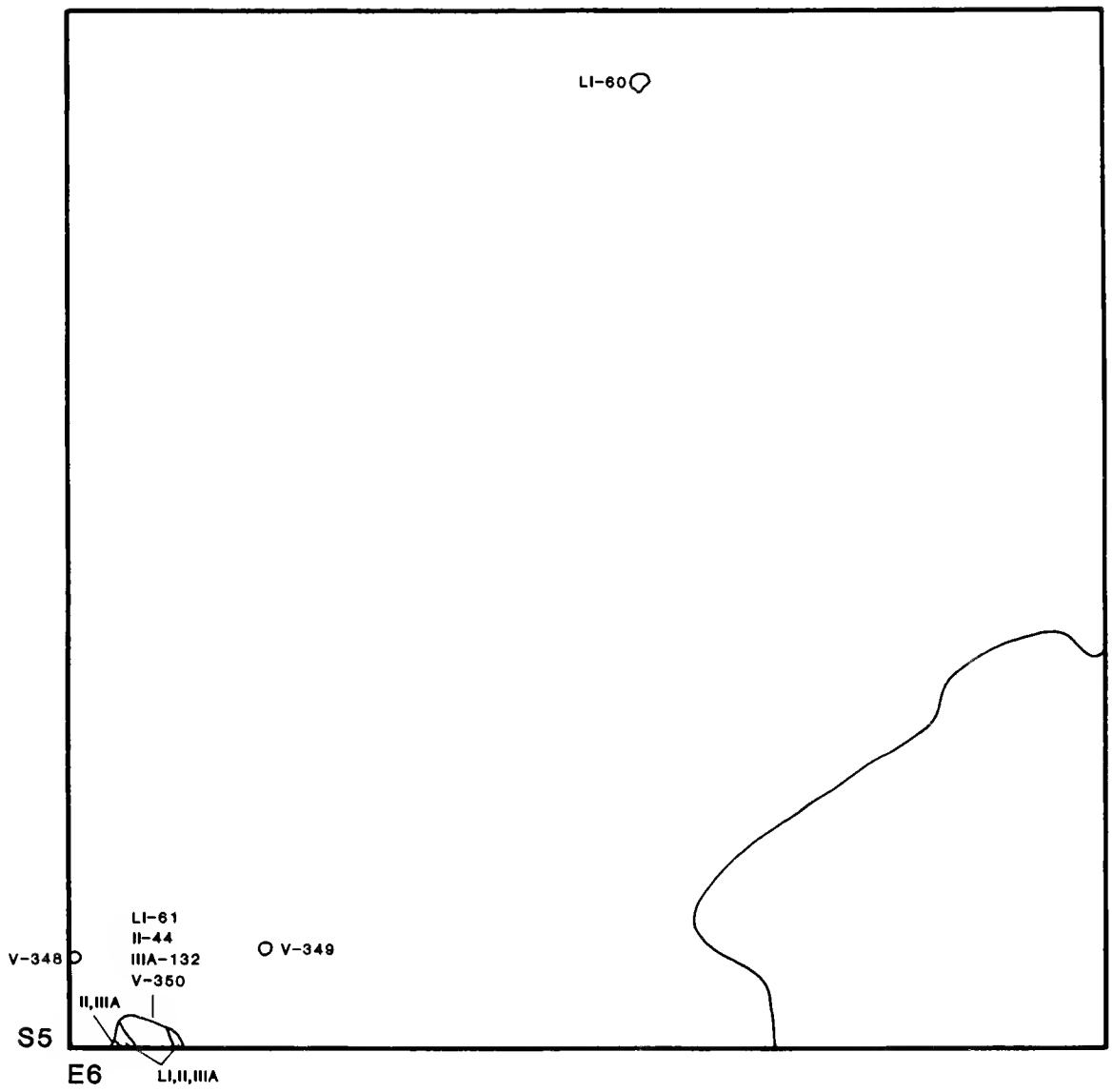

V-342
V-332
V-343
S4
E6

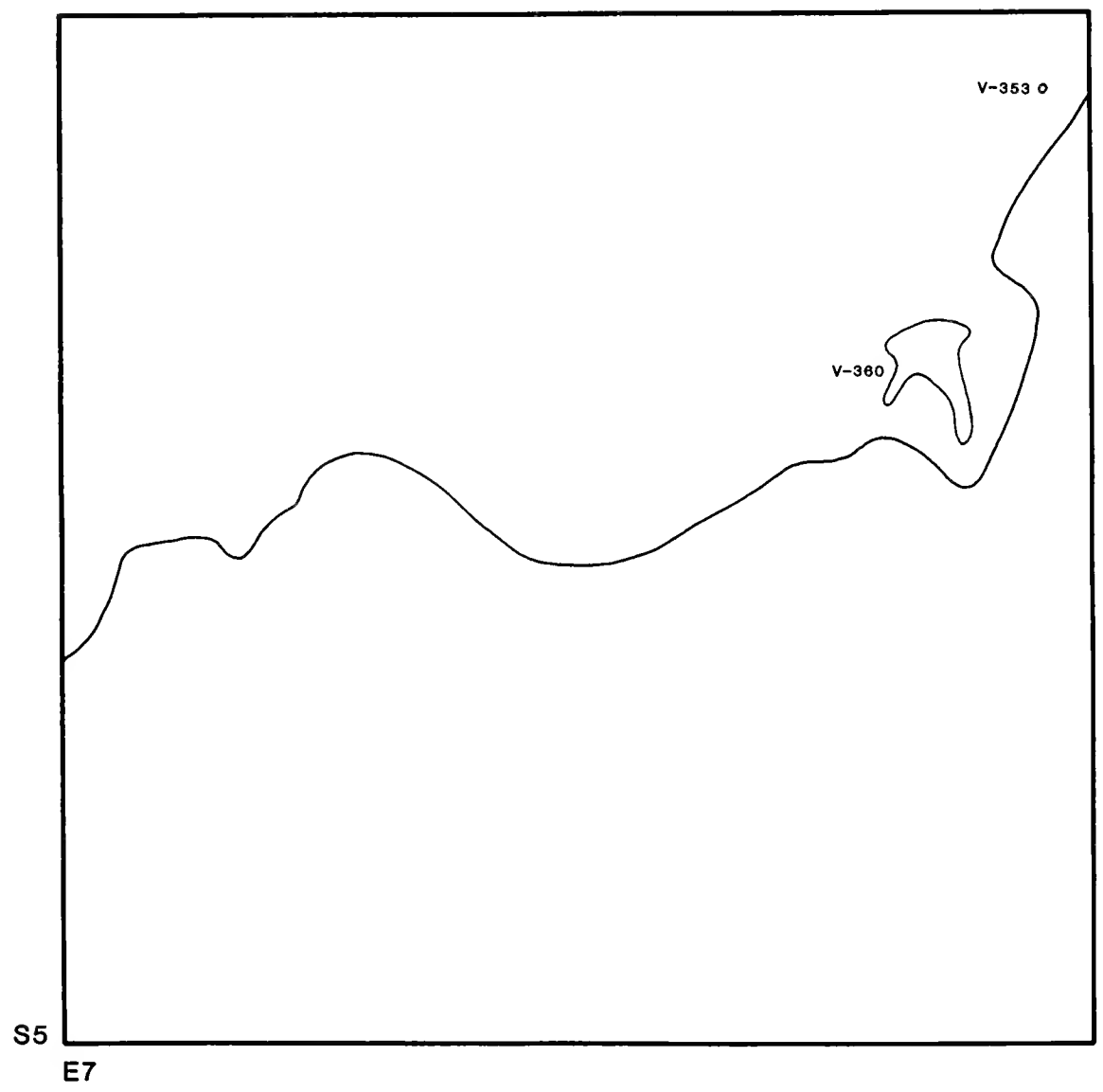

No sites
S4
E7

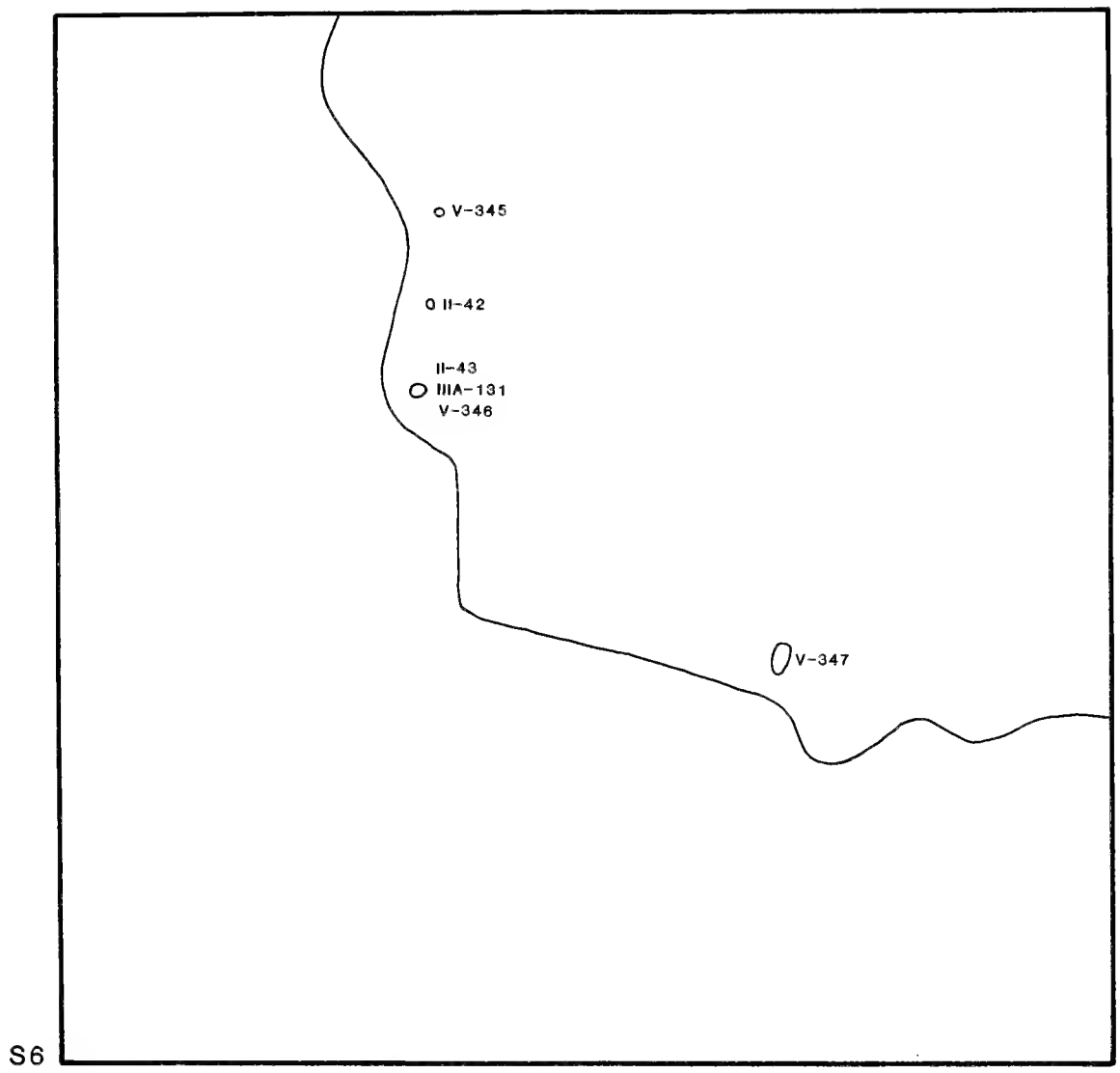

V-319
V-320
V-355
V-356
V-354
V-358
V-357
V-359
IIIA-134
S4
E8

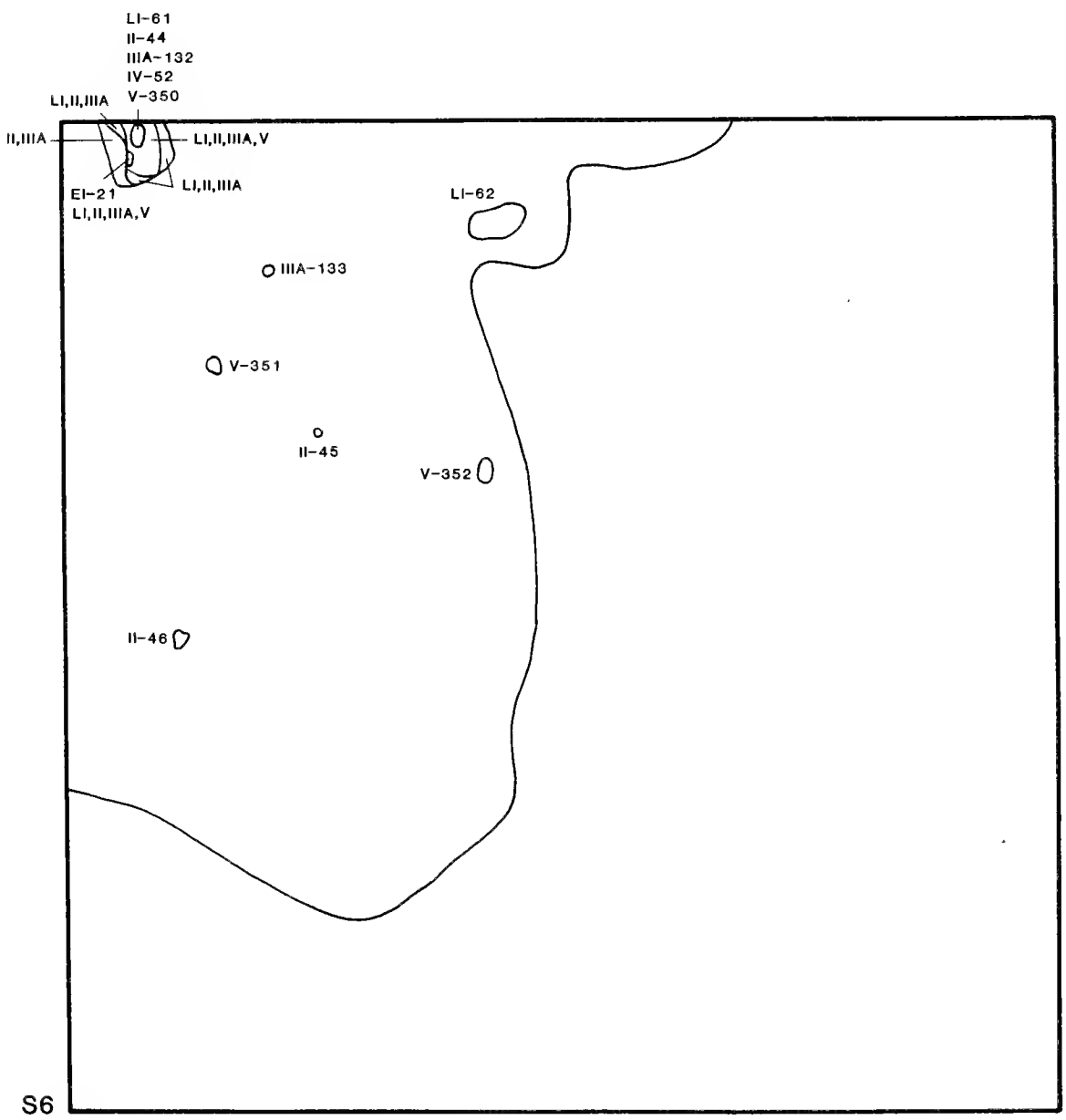

II-37
IIIA-126
V-327
IIA-127
ND-5
IIIA-135
V-362
IIIA
IIIA
V-361
S4
E9


V-338
V-339
V-340
V-341
V-344
V-348
S5
E5


LI-60
LI-61
II-44
IIIA-132
V-350
V-348
V-349
II,IIIA
S5
E6
LI,II,IIIA


V-353
V-360
S5
E7


V-345
II-42
II-43
IIIA-131
V-346
V-347
S6
E5


LI-61
II-44
IIIA-132
IV-52
LI,II,IIIA V-350
II,IIIA
LI,II,IIIA,V
EI-21
LI,II,IIIA,V
LI,II,IIIA
LI-62
IIIA-133
V-351
II-45
V-352
II-46
S6
E6

## Appendix VI. Ejutla Terrace Data

This appendix includes information on all terraces that were recorded during the Ejutla Valley settlement pattern survey, including lone terraces that were mapped at three sites that we do not consider as terrace sites (EJ-YO-YO-12, EJ-LP-LG-1, and EJ-EJ-LO-11). The first table presents summary information for each terrace site. For each terrace, length and width measurements are listed in meters, and terrace area is listed in square meters. Phases of occupation are indicated by phase component numbers. The final column includes special items found on the terraces beyond the usual pottery sherds. Materials are abbreviated as follows: ob = obsidian, cht = chert, qtz = quartz, quartzite = qtzte, gnstn = greenstone, bl = blade, fl = flake, pp = projectile point, metate = met, scraper = scpr, spindle whorl = sp wh, fragment = frag, piece = pc, figurine = fig, worked = wkd, green = gn, gray = gy, black = blk. The column also contains information on architectural features, such house foundations (fndn), unusual amounts of building stone (bldg stone), or especially well preserved retaining walls (ret wall). All house foundation measurements are in meters.

## Appendix VI.A. Ejutla Terrace Summaries by Site

| Field no. | No. of terraces | Average length (m) | Average width (m) | Average area ($m^2$) | No. with items | % with items | Defensive walls | Defendable location | Phases |
|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 1 | 140 | 17.4 | 7.0 | 139.3 | 23 | 16.4 | yes | yes | IIIA, IV, V |
| EJ CA CA 13 | 28 | 26.1 | 7.0 | 207.6 | 18 | 64.3 | yes | yes | IIIA, V |
| EJ EJ EA 6 | 6 | 25.8 | 3.9 | 108.6 | 0 | 0.0 | yes | yes | V |
| EJ EJ EC 4 | ? | — | — | — | — | — | — | yes | V |
| EJ EJ EJ 27 | 54 | 13.8 | 4.5 | 70.0 | 10 | 18.5 | ? | yes | V |
| EJ EJ EJ 30 | 48 | 10.9 | 4.4 | 49.6 | 6 | 12.5 | ? | yes | V |
| EJ EJ EV 2 and 13 | 20 | 25.6 | 8.4 | 288.1 | 6 | 30.0 | yes | yes | IV, V |
| EJ EJ LO 7 | 3 | 39.5 | 6.7 | 267.6 | 0 | 0.0 | ? | no | V |
| EJ EJ LO 8 | 4 | 27.5 | 7.0 | 203.3 | 0 | 0.0 | no | yes | IIIA |
| EJ EJ SCN 5 | 5 | 25.4 | 6.4 | 153.4 | 0 | 0.0 | ? | no | V |
| EJ EJ SJ 2 | 6 | 19.2 | 6.8 | 126.5 | 1 | 16.7 | no | no | IIIA, V |
| EJ EJ SMC 6 | 19 | 18.2 | 6.6 | 133.9 | 1 | 5.3 | ? | yes | IIIA, V |
| EJ LC AE 7 | 5 | 15.2 | 7.3 | 111.6 | 2 | 40.0 | ? | yes | V |
| EJ SAZ SAZ 4 | 8 | 17.1 | 7.4 | 133.3 | 0 | 0.0 | no | yes | IIIA, V |
| EJ SML SML 14 | 5 | 15.3 | 5.0 | 75.0 | 0 | 0.0 | no | no | IV |
| EJ SML SML 16 | 59 | 18.6 | 5.0 | 105.6 | 0 | 0.0 | yes | yes | IIIA, IV, V |
| EJ SML SML 22 | 5 | 11.6 | 6.9 | 83.7 | 0 | 0.0 | ? | yes | IV |
| OC SJP SJP 108 | 64 | 13.6 | 5.6 | 78.1 | 7 | 10.9 | ? | yes | IIIA |
| OC SJP SJP 129 | 8 | 16.9 | 3.9 | 60.1 | 0 | 0.0 | yes | yes | IIIA |

## Appendix VI.B. Ejutla Terrace Details

| Field site no. | Terrace no. | Length | Width | Area | Phase component nos. LI | II | IIIA | IV | V | Artifacts and architecture |
|---|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 1 | 1 | 78 | 11 | 858 | — | — | — | — | 218 | |
| EJ CA CA 1 | 2 | 48 | 33 | 1,584 | — | — | — | 23 | 218 | 1 gy ob bl, abuts platform |
| EJ CA CA 1 | 3 | 20 | 12 | 240 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 4 | 25 | 18 | 450 | — | — | — | 23 | 218 | 1 cht fl, 1 gn ob bl, 1 gy ob fl |
| EJ CA CA 1 | 5 | 23 | 18 | 414 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 6 | 26 | 15 | 390 | — | — | — | 23 | 218 | 1 cht fl |
| EJ CA CA 1 | 7 | 15 | 10 | 150 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 8 | 25 | 10 | 250 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 9 | 45 | 21 | 945 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 10 | 18 | 11 | 198 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 11 | 4 | 3 | 12 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 12 | 40 | 18 | 720 | — | — | — | 23 | 218 | 1 qtz fl |
| EJ CA CA 1 | 13 | 26 | 20 | 520 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 14 | 5 | 4 | 20 | — | — | — | — | 218 | |
| EJ CA CA 1 | 15 | 20 | 20 | 400 | — | — | — | — | 218 | 1 gy ob bl, house fndn |
| EJ CA CA 1 | 16 | 18 | 7 | 126 | — | — | — | — | 218 | |
| EJ CA CA 1 | 17 | 13 | 5 | 65 | — | — | — | — | 218 | |
| EJ CA CA 1 | 18 | 15 | 10 | 150 | — | — | — | — | 218 | |
| EJ CA CA 1 | 19 | 15 | 11 | 165 | — | — | — | — | 218 | 1 mano |
| EJ CA CA 1 | 20 | 14 | 5 | 70 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 21 | 14 | 6 | 84 | — | — | — | 23 | 218 | possible G-3M kilnwaster |
| EJ CA CA 1 | 22 | 8 | 6 | 48 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 23 | 10 | 6 | 60 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 24 | 6 | 6 | 36 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 25 | 18 | 6 | 108 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 26 | 8 | 8 | 64 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 27 | 14 | 12 | 168 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 28 | 10 | 6 | 60 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 29 | 10 | 8 | 80 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 30 | 14 | 10 | 140 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 31 | 12 | 10 | 120 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 32 | 12 | 6 | 72 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 33 | 13 | 10 | 130 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 34 | 10 | 3 | 30 | — | — | — | — | 218 | |
| EJ CA CA 1 | 35 | 9 | 3 | 27 | — | — | — | — | 218 | |
| EJ CA CA 1 | 36 | 9 | 2 | 18 | — | — | — | — | 218 | |
| EJ CA CA 1 | 37 | 12 | 5 | 60 | — | — | — | — | 218 | |
| EJ CA CA 1 | 38 | 12 | 5 | 60 | — | — | — | — | 218 | |
| EJ CA CA 1 | 39 | 5 | 3 | 15 | — | — | — | — | 218 | many qtz fl |
| EJ CA CA 1 | 40 | 9 | 1.5 | 13.5 | — | — | — | — | 218 | |
| EJ CA CA 1 | 41 | 7 | 2 | 14 | — | — | — | — | 218 | |
| EJ CA CA 1 | 42 | 6 | 6 | 36 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 43 | 14 | 6 | 84 | — | — | — | — | 218 | |
| EJ CA CA 1 | 44 | 14 | 7 | 98 | — | — | — | — | 218 | |
| EJ CA CA 1 | 45 | 10 | 7 | 70 | — | — | — | — | 218 | |
| EJ CA CA 1 | 46 | 19 | 5 | 95 | — | — | — | — | 218 | |
| EJ CA CA 1 | 47 | 22 | 5 | 110 | — | — | — | — | 218 | |
| EJ CA CA 1 | 48 | 10 | 5 | 50 | — | — | — | — | 218 | |
| EJ CA CA 1 | 49 | 24 | 10 | 240 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 50 | 18 | 10 | 180 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 51 | 12 | 4 | 48 | — | — | — | 23 | 218 | |
| EJ CA CA 1 | 52 | 20 | 12 | 240 | — | — | — | — | 218 | many cht fl |
| EJ CA CA 1 | 53 | 11 | 4 | 44 | — | — | — | — | 218 | |
| EJ CA CA 1 | 54 | 15 | 4 | 60 | — | — | — | — | 218 | |
| EJ CA CA 1 | 55 | 12 | 6 | 72 | — | — | — | — | 218 | |
| EJ CA CA 1 | 56 | 18 | 10 | 180 | — | — | — | 23 | 218 | built on natural outcrop |
| EJ CA CA 1 | 57 | 19 | 5 | 95 | — | — | — | 20 | 218 | |
| EJ CA CA 1 | 58 | 17 | 13 | 221 | — | — | — | 20 | 218 | bldg stone |
| EJ CA CA 1 | 59 | 18 | 9 | 162 | — | — | — | 20 | 218 | |
| EJ CA CA 1 | 60 | 13 | 9 | 117 | — | — | — | — | 218 | possible structure |
| EJ CA CA 1 | 61 | 13 | 10 | 130 | — | — | — | — | 218 | |
| EJ CA CA 1 | 62 | 16 | 15 | 240 | — | — | — | — | 218 | |
| EJ CA CA 1 | 63 | 38 | 4 | 152 | — | — | — | — | 218 | possible structure |
| EJ CA CA 1 | 64 | 10 | 4 | 40 | — | — | — | — | 218 | |
| EJ CA CA 1 | 65 | 15 | 15 | 225 | — | — | — | — | 218 | triangular shape |

## Appendix VI.B. *Continued.*

| Field site no. | Terrace no. | Length | Width | Area | Phase component nos. LI | II | IIIA | IV | V | Artifacts and architecture |
|---|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 1 | 66 | 13 | 5 | 65 | — | — | — | 24 | 218 | |
| EJ CA CA 1 | 67 | 30 | 2 | 60 | — | — | — | 24 | 218 | |
| EJ CA CA 1 | 68 | 11 | 10 | 110 | — | — | — | 24 | 218 | *sahumador* handle |
| EJ CA CA 1 | 69 | 8 | 4 | 32 | — | — | — | 24 | 218 | |
| EJ CA CA 1 | 70 | 11 | 3 | 33 | — | — | — | 24 | 218 | urn frag |
| EJ CA CA 1 | 71 | 13 | 8 | 104 | — | — | — | 24 | 218 | |
| EJ CA CA 1 | 72 | 42 | 7 | 294 | — | — | 91 | 24 | 218 | |
| EJ CA CA 1 | 73 | 15.5 | 4 | 62 | — | — | 91 | 24 | 218 | |
| EJ CA CA 1 | 74 | 25 | 9 | 225 | — | — | — | 24 | 218 | 1 cht core, plaster floor, *sahumador* handle |
| EJ CA CA 1 | 75 | 6 | 3.5 | 21 | — | — | — | 24 | 218 | |
| EJ CA CA 1 | 76 | 19 | 10 | 190 | — | — | — | 24 | 218 | 1 gnstn bl, 1 shell, cut stone, plaster floor |
| EJ CA CA 1 | 77 | 17 | 8 | 136 | — | — | — | 24 | 218 | 1 gy ob bl, 1 gy ob fl, 1 met, 1 cht scpr |
| EJ CA CA 1 | 78 | 28 | 4 | 112 | — | — | — | 24 | 218 | 1 cht fl |
| EJ CA CA 1 | 79 | 19 | 8 | 152 | — | — | — | — | 218 | bldg stone |
| EJ CA CA 1 | 80 | 18 | 7 | 126 | — | — | — | — | 218 | |
| EJ CA CA 1 | 81 | 19 | 5 | 95 | — | — | — | 24 | 218 | |
| EJ CA CA 1 | 82 | 10 | 7 | 70 | — | — | — | — | 218 | |
| EJ CA CA 1 | 83 | 11 | 5 | 55 | — | — | — | — | 218 | |
| EJ CA CA 1 | 84 | 15 | 7 | 105 | — | — | — | 25 | 218 | 1 cht fl |
| EJ CA CA 1 | 85 | 32 | 4 | 128 | — | — | — | 25 | 218 | *sahumador* handle |
| EJ CA CA 1 | 86 | 27 | 7 | 189 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 87 | 6 | 3 | 18 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 88 | 5 | 3 | 15 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 89 | 37 | 5 | 185 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 90 | 9 | 4 | 36 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 91 | 23 | 4 | 92 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 92 | 8 | 5 | 40 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 93 | 14 | 5 | 70 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 94 | 37 | 4 | 148 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 95 | 5 | 4 | 20 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 96 | 14 | 7 | 98 | — | — | — | 25 | 218 | many cht and crystaline fl |
| EJ CA CA 1 | 97 | 21 | 2 | 42 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 98 | 8 | 3 | 24 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 99 | 10 | 3 | 30 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 100 | 23 | 3 | 69 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 101 | 37 | 5 | 185 | — | — | — | 25 | 218 | many cht fl |
| EJ CA CA 1 | 102 | 8 | 4 | 32 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 103 | 9 | 7 | 63 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 104 | 18 | 13 | 234 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 105 | 20 | 6 | 120 | — | — | — | — | 218 | |
| EJ CA CA 1 | 106 | 20 | 6.5 | 130 | — | — | — | — | 218 | |
| EJ CA CA 1 | 107 | 42 | 5.5 | 231 | — | — | — | — | 218 | |
| EJ CA CA 1 | 108 | 11 | 5 | 55 | — | — | — | — | 218 | |
| EJ CA CA 1 | 109 | 12 | 5 | 60 | — | — | — | 25 | 218 | |
| EJ CA CA 1 | 110 | 12 | 1.5 | 18 | — | — | — | — | 218 | |
| EJ CA CA 1 | 111 | 30 | 2.5 | 75 | — | — | — | — | 218 | 1 sherd disk, *sahumador* handle |
| EJ CA CA 1 | 112 | 30 | 2.5 | 75 | — | — | 91 | 24 | 218 | *sahumador* handle |
| EJ CA CA 1 | 113 | 18 | 5 | 90 | — | — | — | — | 218 | |
| EJ CA CA 1 | 114 | 20 | 3.5 | 70 | — | — | — | 28 | 218 | |
| EJ CA CA 1 | 115 | 17 | 13 | 221 | — | — | — | — | 218 | |
| EJ CA CA 1 | 116 | 17 | 5 | 85 | — | — | — | — | 218 | |
| EJ CA CA 1 | 117 | 12 | 2 | 24 | — | — | — | — | 218 | |
| EJ CA CA 1 | 118 | 9 | 6 | 54 | — | — | — | — | 218 | |
| EJ CA CA 1 | 119 | 10 | 4 | 40 | — | — | — | — | 218 | |
| EJ CA CA 1 | 120 | 25 | 7 | 175 | — | — | — | — | 218 | |
| EJ CA CA 1 | 121 | 13 | 3 | 39 | — | — | — | — | 218 | |
| EJ CA CA 1 | 122 | 31 | 3.5 | 108.5 | — | — | — | — | 218 | |
| EJ CA CA 1 | 123 | 26 | 12 | 312 | — | — | — | — | 218 | 1 graphite on orange |
| EJ CA CA 1 | 124 | 19 | 10 | 190 | — | — | — | — | 218 | |
| EJ CA CA 1 | 125 | 21 | 9.5 | 199.5 | — | — | — | — | 218 | |
| EJ CA CA 1 | 126 | 13 | 2.5 | 32.5 | — | — | — | — | 218 | |

Appendix VI.B. *Continued.*

| Field site no. | Terrace no. | Length | Width | Area | Phase component nos. LI | II | IIIA | IV | V | Artifacts and architecture |
|---|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 1 | 127 | 17 | 5 | 85 | — | — | — | — | 218 | |
| EJ CA CA 1 | 128 | 14 | 8 | 112 | — | — | — | — | 218 | |
| EJ CA CA 1 | 129 | 18 | 9 | 162 | — | — | — | — | 218 | |
| EJ CA CA 1 | 130 | 8 | 5 | 40 | — | — | — | — | 218 | |
| EJ CA CA 1 | 131 | 14 | 2 | 28 | — | — | — | — | 218 | 1 chalcedony drill |
| EJ CA CA 1 | 132 | 16 | 4 | 64 | — | — | — | — | 218 | |
| EJ CA CA 1 | 133 | 30 | 5 | 150 | — | — | — | — | 218 | |
| EJ CA CA 1 | 134 | 31.5 | 6.5 | 204.75 | — | — | — | 27 | 218 | |
| EJ CA CA 1 | 135 | 6 | 3 | 18 | — | — | — | — | 218 | |
| EJ CA CA 1 | 136 | 15.5 | 3 | 46.5 | — | — | — | — | 218 | |
| EJ CA CA 1 | 137 | 12 | 4 | 48 | — | — | — | 27 | 218 | wall |
| EJ CA CA 1 | 138 | 18 | 5 | 90 | — | — | — | — | 218 | wall |
| EJ CA CA 1 | 139 | 10.5 | 9 | 94.5 | — | — | — | — | 218 | 1 misfired gris |
| EJ CA CA 1 | 140 | 18 | 4 | 72 | — | — | — | — | 218 | |
| EJ CA CA 13 | 1 | 20 | 7 | 140 | — | — | 135 | — | 362 | 1 blk ob bl, ret wall |
| EJ CA CA 13 | 2 | 15 | 6.5 | 97.5 | — | — | 135 | — | 362 | 1 cht scpr, 1 cht pp, ret wall |
| EJ CA CA 13 | 3 | 28 | 5 | 140 | — | — | 135 | — | — | 3 gy ob bl, ret wall |
| EJ CA CA 13 | 4 | 21 | 8 | 168 | — | — | 135 | — | — | mica, ret wall |
| EJ CA CA 13 | 5 | 14 | 5 | 70 | — | — | 135 | — | — | ret wall |
| EJ CA CA 13 | 6 | 16 | 6 | 96 | — | — | 135 | — | — | ret wall |
| EJ CA CA 13 | 7 | 11 | 4.5 | 49.5 | — | — | 135 | — | — | ret wall |
| EJ CA CA 13 | 8 | 17 | 9 | 153 | — | — | 135 | — | — | ret wall |
| EJ CA CA 13 | 9 | 18 | 7 | 126 | — | — | 135 | — | — | ret wall |
| EJ CA CA 13 | 10 | 14 | 3 | 42 | — | — | 135 | — | — | ret wall |
| EJ CA CA 13 | 11 | 9.5 | 5 | 47.5 | — | — | 135 | — | — | ret wall |
| EJ CA CA 13 | 12 | 8 | 3.5 | 28 | — | — | 135 | — | — | ret wall |
| EJ CA CA 13 | 13 | 13 | 4 | 52 | — | — | 135 | — | — | cut stone, ret wall |
| EJ CA CA 13 | 14 | 31 | 15 | 465 | — | — | 135 | — | — | 6 gy ob bl, 1 blk ob bl, 1 met, retain wall |
| EJ CA CA 13 | 15 | 30 | 11 | 330 | — | — | 135 | — | — | 1 gy ob bl, 1 gn ob fl, ret wall |
| EJ CA CA 13 | 16 | 22 | 12 | 264 | — | — | 135 | — | 362 | 1 gy ob bl, 2 blk ob bl, 1 met frag, wall |
| EJ CA CA 13 | 17 | 26 | 4 | 104 | — | — | 135 | — | — | 1 pc shell, 1 gy ob proj pt, 1 gy ob bl, ret wall |
| EJ CA CA 13 | 18 | 133 | 10 | 1,330 | — | — | 135 | — | — | mano, met, 1 gy ob bl, 1 pc shell, 1 stone bead, human long bone |
| EJ CA CA 13 | 19 | 10 | 3 | 30 | — | — | 135 | — | — | 1 gy ob bl, 1 gy ob fl, ret wall |
| EJ CA CA 13 | 20 | 67 | 5 | 335 | — | — | 135 | — | — | 1 shell, 2 cht fl, 2 gy ob bl, ret wall |
| EJ CA CA 13 | 21 | 29 | 12 | 348 | — | — | 135 | — | — | 4 blk ob bl, 2 gy ob bl, 1 blk cht fl, 1 sp wh, 2 fig frag, 2 urn frag |
| EJ CA CA 13 | 22 | 21 | 6 | 126 | — | — | 135 | — | — | 1 blk ob fl, 1 gy ob fl, 1 cht bl, 1 cht fl, 1 pp, 1 pc shell, ret wall |
| EJ CA CA 13 | 23 | 43 | 8 | 344 | — | — | 135 | — | — | 2 gy ob bl, 3 blk ob bl, ret wall |
| EJ CA CA 13 | 24 | 43 | 10 | 430 | — | — | 135 | — | — | 1 blk ob bl, 1 gy ob bl |
| EJ CA CA 13 | 25 | 12 | 9 | 108 | — | — | 135 | — | — | 1 cht fl, 1 blk ob fl, |

## Appendix VI.B. *Continued.*

| Field site no. | Terrace no. | Length | Width | Area | Phase component nos. LI | II | IIIA | IV | V | Artifacts and architecture |
|---|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 13 | 26 | 10 | 4.5 | 45 | — | — | 135 | — | — | 1 gy ob bl, 1 cht fl, ret wall |
| EJ CA CA 13 | 27 | 13 | 5 | 65 | — | — | 135 | — | — | 1 gy ob bl, 1 cht pp, 1 cht frag |
| EJ CA CA 13 | 28 | 35 | 8 | 280 | — | — | 135 | — | — | ret wall |
| EJ EJ EV 2 | 1 | 32 | 10 | 320 | — | — | — | 3 | 69 | 2 gn ob bl, 1 gn ob pc, 1 pc worked basalt, possible V cer prod |
| EJ EJ EV 2 | 2 | 22 | 7 | 154 | — | — | — | — | 69 | |
| EJ EJ EV 2 | 3 | 8 | 2 | 16 | — | — | — | — | 69 | |
| EJ EJ EV 2 | 4 | 28 | 5 | 140 | — | — | — | — | 69 | |
| EJ EJ EV 2 | 5 | 77 | 19 | 1,463 | — | — | — | 3 | 69 | 1 stone bead, house rubble |
| EJ EJ EV 2 | 6 | 8 | 5 | 40 | — | — | — | — | 69 | |
| EJ EJ EV 2 | 7 | 64 | 11 | 704 | — | — | — | 3 | 69 | |
| EJ EJ EV 2 | 8 | 41 | 17 | 697 | — | — | — | 3 | 69 | |
| EJ EJ EV 2 | 9 | 62 | 13 | 806 | — | — | — | 3 | 69 | |
| EJ EJ EV 2 | 10 | 17 | 9 | 153 | — | — | — | 3 | 69 | 2 misfired sherds |
| EJ EJ EV 2 | 11 | 29 | 16 | 464 | — | — | — | 3 | 69 | |
| EJ EJ EV 2 | 12 | 11 | 7 | 77 | — | — | — | — | 69 | 1 qtz scpr frag |
| EJ EJ EV 2 | 13 | 30 | 9 | 270 | — | — | — | — | 69 | |
| EJ EJ EV 2 | 14 | 10 | 4.5 | 45 | — | — | — | — | 69 | |
| EJ EJ EV 2 | 15 | 19 | 5 | 95 | — | — | — | — | 69 | |
| EJ EJ EV 2 | 16 | 12 | 5 | 60 | — | — | — | — | 69 | |
| EJ EJ EV 13 | 1 | 15 | 8.5 | 127.5 | — | — | — | 1 | 69 | |
| EJ EJ EV 13 | 2 | 10 | 5.5 | 55 | — | — | — | 1 | 69 | 1 gy ob fl |
| EJ EJ EV 13 | 3 | 7 | 2.7 | 18.9 | 5 | — | — | — | 69 | |
| EJ EJ EV 13 | 4 | 9.5 | 6 | 57 | — | — | — | — | 69 | 3 pc qtzte |
| EJ EJ EA 6 | 1 | 23 | 5.5 | 126.5 | — | — | — | — | 320 | ret wall |
| EJ EJ EA 6 | 2 | 45 | 5 | 225 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 3 | 15 | 4 | 60 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 4 | 36 | 4 | 144 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 5 | 12 | 2 | 24 | — | — | — | — | 320 | ret wall |
| EJ EJ EA 6 | 6 | 24 | 3 | 72 | — | — | — | — | 320 | |
| EJ EJ EJ 27 | 1 | 13 | 3 | 39 | — | — | — | — | 174 | ret wall |
| EJ EJ EJ 27 | 2 | 12 | 4 | 48 | — | — | — | — | 174 | ret wall |
| EJ EJ EJ 27 | 3 | 19 | 3 | 57 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 4 | 15 | 4 | 60 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 5 | 10 | 4 | 40 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 6 | 11 | 4 | 44 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 7 | 23 | 7 | 161 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 8 | 17 | 5 | 85 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 9 | 8 | 3 | 24 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 10 | 13 | 4 | 52 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 11 | 6 | 2 | 12 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 12 | 6 | 3 | 18 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 13 | 10 | 3 | 30 | — | — | — | — | 174 | 1 cht fl |
| EJ EJ EJ 27 | 14 | 8 | 4 | 32 | — | — | — | — | 174 | 1 cht scpr |
| EJ EJ EJ 27 | 15 | 16 | 6 | 96 | — | — | — | — | 174 | 2 gy ob bl, 2 blk ob bl, many cht fl, mano |
| EJ EJ EJ 27 | 16 | 19 | 5 | 95 | — | — | — | — | 174 | 1 gy ob bl |
| EJ EJ EJ 27 | 17 | 8 | 3 | 24 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 18 | 7 | 3 | 21 | — | — | — | — | 174 | 2 gy ob bl |
| EJ EJ EJ 27 | 19 | 33 | 5 | 165 | — | — | — | — | 174 | 1 met frag, several schist fl |
| EJ EJ EJ 27 | 20 | 12 | 4 | 48 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 21 | 27 | 3 | 81 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 22 | 12 | 3 | 36 | — | — | — | — | 174 | 1 gy ob fl |
| EJ EJ EJ 27 | 23 | 14 | 3 | 42 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 25 | 37 | 15 | 555 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 26 | 10 | 6 | 60 | — | — | — | — | 174 | 1 gy ob bl |
| EJ EJ EJ 27 | 27 | 11 | 4 | 44 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 28 | 13 | 5 | 65 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 29 | 12 | 2 | 24 | — | — | — | — | 174 | 1 gy ob bl, urn frag |
| EJ EJ EJ 27 | 30 | 22 | 4 | 88 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 31 | 10 | 3 | 30 | — | — | — | — | 174 | |

Appendix VI.B. *Continued.*

| Field site no. | Terrace no. | Length | Width | Area | Phase component nos. LI | II | IIIA | IV | V | Artifacts and architecture |
|---|---|---|---|---|---|---|---|---|---|---|
| EJ EJ EJ 27 | 32 | 6.5 | 4 | 26 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 33 | 10 | 6 | 60 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 34 | 11 | 6 | 66 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 35 | 12 | 3 | 36 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 36 | 15 | 5 | 75 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 37 | 8 | 5 | 40 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 38 | 8 | 4 | 32 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 39 | 13 | 6 | 78 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 40 | 16 | 4 | 64 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 41 | 18 | 4 | 72 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 42 | 19 | 5.5 | 104.5 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 43 | 12 | 6 | 72 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 44 | 10 | 3 | 30 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 45 | 17.5 | 11 | 192.5 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 46 | 12 | 4 | 48 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 47 | 14 | 5 | 70 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 48 | 14 | 5 | 70 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 49 | 13 | 4 | 52 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 50 | 10 | 4 | 40 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 51 | 11 | 5 | 55 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 52 | 10 | 3 | 30 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 53 | 12 | 3 | 36 | — | — | — | — | 174 | 1 chalcedony fl |
| EJ EJ EJ 27 | 54 | 11 | 3 | 33 | — | — | — | — | 174 | |
| EJ EJ EJ 27 | 55 | 28 | 8 | 224 | — | — | — | — | 174 | |
| EJ EJ EJ 30 | 1 | 8 | 7 | 56 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 2 | 24 | 8 | 192 | — | — | — | — | 173 | 2 cht fl, 1 chalcedony fl, house fndn |
| EJ EJ EJ 30 | 3 | 10 | 6 | 60 | — | — | — | — | 173 | 1 hammerstone |
| EJ EJ EJ 30 | 4 | 16 | 5.5 | 88 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 5 | 16 | 6 | 96 | — | — | — | — | 173 | 1 gy stone bl |
| EJ EJ EJ 30 | 6 | 5 | 4 | 20 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 7 | 10 | 5 | 50 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 8 | 15 | 2 | 30 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 9 | 18 | 3 | 54 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 10 | 28 | 2 | 56 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 11 | 7 | 3 | 21 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 12 | 8.5 | 5 | 42.5 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 13 | 12 | 6 | 72 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 14 | 21 | 6 | 126 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 15 | 8 | 4 | 32 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 16 | 6 | 4 | 24 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 17 | 8 | 3.5 | 28 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 18 | 8 | 4 | 32 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 19 | 10 | 4 | 40 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 20 | 11 | 4 | 44 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 21 | 9 | 3.5 | 31.5 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 22 | 11 | 3 | 33 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 23 | 4 | 3 | 12 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 24 | 9 | 3 | 27 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 25 | 11 | 4 | 44 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 26 | 12 | 3 | 36 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 27 | 12 | 4 | 48 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 28 | 7 | 5 | 35 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 29 | 13 | 5 | 65 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 30 | 10 | 4 | 40 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 31 | 7 | 6 | 42 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 32 | 4 | 3 | 12 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 33 | 9 | 4 | 36 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 34 | 4 | 3 | 12 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 35 | 6 | 3 | 18 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 36 | 6 | 4 | 24 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 37 | 11 | 5 | 55 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 38 | 10 | 5 | 50 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 39 | 9 | 6 | 54 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 40 | 10 | 6 | 60 | — | — | — | — | 173 | 1 gy ob bl |
| EJ EJ EJ 30 | 41 | 20 | 6 | 120 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 42 | 14 | 5 | 70 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 43 | 9 | 4 | 36 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 44 | 14 | 6 | 84 | — | — | — | — | 173 | 1 blk ob bl |
| EJ EJ EJ 30 | 45 | 7 | 3.5 | 24.5 | — | — | — | — | 173 | |

## Appendix VI.B. *Continued.*

| Field site no. | Terrace no. | Length | Width | Area | Phase component nos. LI | II | IIIA | IV | V | Artifacts and architecture |
|---|---|---|---|---|---|---|---|---|---|---|
| EJ EJ EJ 30 | 46 | 12 | 2 | 24 | — | — | — | — | 173 | |
| EJ EJ EJ 30 | 47 | 11 | 3 | 33 | — | — | — | — | 173 | 1 gy ob bl |
| EJ EJ EJ 30 | 48 | 15 | 6 | 90 | — | — | — | — | 173 | |
| EJ EJ LO 7 | 1 | 42.5 | 9.5 | 403.75 | — | — | — | — | 151 | ret wall |
| EJ EJ LO 7 | 2 | 38 | 7 | 266 | — | — | — | — | 151 | ret wall |
| EJ EJ LO 7 | 3 | 38 | 3.5 | 133 | — | — | — | — | 151 | ret wall |
| EJ EJ LO 8 | 1 | 10 | 5 | 50 | — | — | 43 | — | — | ret wall |
| EJ EJ LO 8 | 2 | 40 | 8 | 320 | — | — | 43 | — | — | ret wall |
| EJ EJ LO 8 | 3 | 37 | 7 | 259 | — | — | 43 | — | — | ret wall |
| EJ EJ LO 8 | 4 | 23 | 8 | 184 | — | — | 43 | — | — | |
| EJ EJ LO 11 | 1 | 15 | 8 | 120 | — | — | — | — | 156 | ret wall, bldg stone |
| EJ EJ SCN 5 | 1 | 18 | 10 | 180 | — | — | — | — | 226 | ret wall |
| EJ EJ SCN 5 | 2 | 26 | 8 | 208 | — | — | — | — | 226 | natural wall |
| EJ EJ SCN 5 | 3 | 26 | 8 | 208 | — | — | — | — | 226 | ret wall |
| EJ EJ SCN 5 | 4 | 32 | 3 | 96 | — | — | — | — | 226 | |
| EJ EJ SCN 5 | 5 | 25 | 3 | 75 | — | — | — | — | 226 | ret wall |
| EJ EJ SJ 2 | 1 | 14 | 7 | 98 | — | — | 31 | — | 116 | 1 gy ob bl, 1 blk ob chnk, ground stone |
| EJ EJ SJ 2 | 2 | 14 | 6 | 84 | — | — | 31 | — | 116 | |
| EJ EJ SJ 2 | 3 | 12 | 7 | 84 | — | — | 31 | — | 116 | bldg stone |
| EJ EJ SJ 2 | 4 | 29 | 9 | 261 | — | — | 31 | — | 116 | |
| EJ EJ SJ 2 | 5 | 34 | 4 | 136 | — | — | 31 | — | 116 | |
| EJ EJ SJ 2 | 6 | 12 | 8 | 96 | — | — | 31 | — | 116 | |
| EJ EJ SMC 6 | 1 | 9 | 4 | 36 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 2 | 13 | 6 | 78 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 3 | 19 | 4 | 76 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 4 | 12 | 3.5 | 42 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 5 | 30 | 7 | 210 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 6 | 15 | 6 | 90 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 7 | 19 | 8 | 152 | — | — | 9 | — | — | possible house fndn |
| EJ EJ SMC 6 | 8 | 8 | 4.5 | 36 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 9 | 12 | 6 | 72 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 10 | 12 | 5 | 60 | — | — | 9 | — | — | house fndn |
| EJ EJ SMC 6 | 11 | 32 | 8 | 256 | — | — | 9 | — | — | house fndn |
| EJ EJ SMC 6 | 12 | 13 | 6 | 78 | — | — | 9 | — | — | house fndn |
| EJ EJ SMC 6 | 13 | 12 | 4 | 48 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 14 | 15 | 7 | 105 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 15 | 19 | 5 | 95 | — | — | 9 | — | — | 1 gy ob bl, house fndn |
| EJ EJ SMC 6 | 16 | 23 | 6 | 138 | — | — | 9 | — | 44 | |
| EJ EJ SMC 6 | 17 | 18 | 10 | 180 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 18 | 36 | 8 | 288 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 19 | 28 | 18 | 504 | — | — | 9 | — | 44 | house fndn, 6 × 7 |
| EJ LC AE 7 | 1 | 11 | 9 | 99 | — | — | — | — | 260 | mano, ret wall |
| EJ LC AE 7 | 2 | 21 | 9 | 189 | — | — | — | — | 260 | |
| EJ LC AE 7 | 3 | 13 | 6 | 78 | — | — | — | — | 260 | mica, plaster floor |
| EJ LC AE 7 | 4 | 16 | 4.5 | 72 | — | — | — | — | 260 | ret wall |
| EJ LC AE 7 | 5 | 15 | 8 | 120 | — | — | — | — | 260 | ret wall |
| EJ LP LG 1 | 1 | 33 | 2.5 | 82.5 | — | — | 24 | — | — | |
| EJ SAZ SAZ 4 | 1 | 13 | 10 | 130 | — | — | 98 | — | 235 | ret wall |
| EJ SAZ SAZ 4 | 2 | 31 | 11 | 341 | — | — | 98 | — | 235 | ret wall |
| EJ SAZ SAZ 4 | 3 | 20 | 7 | 140 | — | — | 98 | — | 235 | |
| EJ SAZ SAZ 4 | 4 | 11 | 3 | 33 | — | — | 98 | — | 235 | |
| EJ SAZ SAZ 4 | 5 | 14 | 13 | 182 | — | — | 98 | — | 235 | |
| EJ SAZ SAZ 4 | 6 | 18 | 5 | 90 | — | — | 98 | — | 235 | |
| EJ SAZ SAZ 4 | 7 | 16 | 5 | 80 | — | — | 98 | — | 235 | |
| EJ SAZ SAZ 4 | 8 | 14 | 5 | 70 | — | — | 98 | — | 235 | |
| EJ SML SML 14 | 1 | 18 | 3 | 54 | — | — | — | 40 | — | ret wall |
| EJ SML SML 14 | 2 | 19 | 5 | 95 | — | — | — | 40 | — | |
| EJ SML SML 14 | 3 | 18 | 6 | 108 | — | — | — | 40 | — | |
| EJ SML SML 14 | 4 | 11 | 5 | 55 | — | — | — | 40 | — | ret wall |
| EJ SML SML 14 | 5 | 10.5 | 6 | 63 | — | — | — | 40 | — | ret wall |
| EJ SML SML 16 | 1 | 29 | 2 | 58 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 2 | 16 | 6 | 96 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 3 | 12 | 4 | 48 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 4 | 13 | 3 | 39 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 5 | 17 | 2 | 34 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 6 | 19 | 1.5 | 28.5 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 7 | 7 | 3.5 | 24.5 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 8 | 23 | 2 | 46 | — | — | 109 | 45 | 257 | |

Appendix VI.B. *Continued.*

| Field site no. | Terrace no. | Length | Width | Area | Phase component nos. LI | II | IIIA | IV | V | Artifacts and architecture |
|---|---|---|---|---|---|---|---|---|---|---|
| EJ SML SML 16 | 9 | 15 | 3 | 45 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 10 | 34 | 10 | 340 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 11 | 8 | 3 | 24 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 12 | 12 | 4 | 48 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 13 | 14 | 3 | 42 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 14 | 7 | 2 | 14 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 15 | 10 | 4 | 40 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 16 | 9 | 2 | 18 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 17 | 9 | 7 | 63 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 18 | 17 | 6 | 102 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 19 | 8 | 4 | 32 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 20 | 13 | 9 | 117 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 21 | 55 | 4 | 220 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 22 | 19 | 8 | 152 | — | — | 109 | 45 | 257 | |
| EJ SML SML 16 | 23 | 13 | 3 | 39 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 24 | 4 | 3 | 12 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 25 | 9 | 3 | 27 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 26 | 12 | 5 | 60 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 27 | 21 | 4 | 84 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 28 | 23 | 3 | 69 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 29 | 13 | 4 | 52 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 30 | 30 | 5 | 150 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 31 | 17 | 3 | 51 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 32 | 12 | 3.5 | 42 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 33 | 27 | 5 | 135 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 34 | 17 | 5 | 85 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 35 | 28 | 4 | 112 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 36 | 12 | 3 | 36 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 37 | 15 | 4 | 60 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 38 | 28 | 5 | 140 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 39 | 14 | 5 | 70 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 40 | 12 | 4 | 48 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 41 | 16 | 3 | 48 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 42 | 29 | 7 | 203 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 43 | 17 | 3 | 51 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 44 | 25 | 7 | 175 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 45 | 15 | 6 | 90 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 46 | 35 | 16 | 560 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 47 | 11 | 4 | 44 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 48 | 11 | 2 | 22 | — | — | 109 | 45 | 257 | ret wall |
| EJ SML SML 16 | 49 | 89 | 8.5 | 756.5 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 50 | 25 | 12 | 300 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 51 | 17 | 6 | 102 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 52 | 26 | 7 | 182 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 53 | 23 | 9 | 207 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 54 | 10 | 8 | 80 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 55 | 17 | 12 | 204 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 56 | 22 | 7 | 154 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 57 | 10 | 5 | 50 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 58 | 9 | 4 | 36 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 16 | 59 | 20 | 3 | 60 | — | — | 109 | — | 257 | ret wall |
| EJ SML SML 22 | 1 | 14 | 10 | 140 | — | — | — | 43 | — | |
| EJ SML SML 22 | 2 | 7 | 6.5 | 45.5 | — | — | — | 43 | — | ret wall |
| EJ SML SML 22 | 3 | 18 | 7 | 126 | — | — | — | 43 | — | house fndn |
| EJ SML SML 22 | 4 | 7 | 5 | 35 | — | — | — | 43 | — | 2 house fndn, 3 × 2 and 4 × 4 |
| EJ SML SML 22 | 5 | 12 | 6 | 72 | — | — | — | 43 | — | |
| EJ YO YO 12 | 1 | 56 | 4 | 224 | 61 | 44 | 132 | 52 | 350 | |
| OC SJP SJP 108 | 1 | 9 | 4 | 36 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 2 | 8 | 2 | 16 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 3 | 4 | 3 | 12 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 4 | 8 | 3 | 24 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 5 | 4 | 2 | 8 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 6 | 9 | 4 | 36 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 7 | 9 | 3 | 27 | — | — | 34 | — | — | 1 gy ob fl |
| OC SJP SJP 108 | 8 | 9 | 3 | 27 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 9 | 9 | 5 | 45 | — | — | 34 | — | — | house fndn, 5 × 4 |
| OC SJP SJP 108 | 10 | 5 | 4 | 20 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 11 | 8 | 4 | 32 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 12 | 13 | 4 | 52 | — | — | 34 | — | — | |

## Appendix VI.B. *Continued.*

| Field site no. | Terrace no. | Length | Width | Area | Phase component nos. LI | II | IIIA | IV | V | Artifacts and architecture |
|---|---|---|---|---|---|---|---|---|---|---|
| OC SJP SJP 108 | 13 | 32.5 | 4 | 130 | — | — | 34 | — | — | house fndn, 3.5 × 4.5 |
| OC SJP SJP 108 | 14 | 20 | 6 | 120 | — | — | 34 | — | — | 2 house fndn, 5 × 3 and 6 × 4 |
| OC SJP SJP 108 | 15 | 10 | 7 | 70 | — | — | 34 | — | — | house fndn, 5 × 5 |
| OC SJP SJP 108 | 16 | 29 | 4 | 116 | — | — | 34 | — | — | mano, possible house fndn |
| OC SJP SJP 108 | 17 | 21 | 4 | 84 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 18 | 12 | 5 | 60 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 19 | 8 | 4 | 32 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 20 | 12 | 5 | 60 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 21 | 9 | 4 | 36 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 22 | 9 | 4 | 36 | — | — | 34 | — | — | many qtz fl |
| OC SJP SJP 108 | 23 | 10 | 5 | 50 | — | — | 34 | — | — | 1 cht fl, many qtz fl |
| OC SJP SJP 108 | 24 | 17 | 4 | 68 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 25 | 10 | 8 | 80 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 26 | 31 | 5.5 | 170.5 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 27 | 20 | 5 | 100 | — | — | 34 | — | — | house fndn, 1.5 × 2.5 |
| OC SJP SJP 108 | 28 | 13 | 6 | 78 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 29 | 22 | 4 | 88 | — | — | 34 | — | — | 2 possible rooms |
| OC SJP SJP 108 | 30 | 18 | 8.5 | 153 | — | — | 34 | — | — | daub |
| OC SJP SJP 108 | 31 | 10 | 9 | 90 | — | — | 34 | — | — | cht, house fndn, 4.5 × 4.5 |
| OC SJP SJP 108 | 32 | 15 | 4 | 60 | — | — | 34 | — | — | 2 internal walls |
| OC SJP SJP 108 | 33 | 9.5 | 8 | 76 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 34 | 8 | 6 | 48 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 35 | 7 | 5.5 | 38.5 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 36 | 18 | 8 | 144 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 37 | 14 | 5 | 70 | — | — | 34 | — | — | burned daub |
| OC SJP SJP 108 | 38 | 18 | 6 | 108 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 39 | 8 | 3 | 24 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 40 | 12 | 5 | 60 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 41 | 19 | 10.5 | 199.5 | — | — | 34 | — | — | qtz crystal, 2 urn frag |
| OC SJP SJP 108 | 42 | 7.5 | 7.5 | 56.25 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 43 | 15 | 13 | 195 | — | — | 34 | — | — | house fndn |
| OC SJP SJP 108 | 44 | 10 | 8 | 80 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 45 | 13 | 9 | 117 | — | — | 34 | — | — | 1 cht scpr, 1 urn frag |
| OC SJP SJP 108 | 46 | 13 | 7.5 | 97.5 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 47 | 14 | 8 | 112 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 48 | 12 | 5 | 60 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 49 | 9 | 8 | 72 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 50 | 15 | 8 | 120 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 51 | 7 | 4 | 28 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 52 | 17 | 5 | 85 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 53 | 12 | 6 | 72 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 54 | 28 | 5.5 | 154 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 55 | 17 | 5 | 85 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 56 | 17 | 5 | 85 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 57 | 12 | 5 | 60 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 58 | 13 | 9 | 117 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 59 | 11 | 3 | 33 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 60 | 8 | 4 | 32 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 61 | 14 | 5 | 70 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 62 | 18 | 6 | 108 | — | — | 34 | — | — | |
| OC SJP SJP 108 | 63 | 25 | 7 | 175 | — | — | 34 | — | — | burned daub |
| OC SJP SJP 108 | 64 | 25 | 8 | 200 | — | — | 34 | — | — | |
| OC SJP SJP 129 | 1 | 9 | 1 | 9 | — | — | 37 | — | — | very good ret wall |
| OC SJP SJP 129 | 2 | 16 | 1.5 | 24 | — | — | 37 | — | — | very good ret wall |
| OC SJP SJP 129 | 3 | 11 | 2 | 22 | — | — | 37 | — | — | very good ret wall |
| OC SJP SJP 129 | 4 | 20 | 1.5 | 30 | — | — | 37 | — | — | met frag |
| OC SJP SJP 129 | 5 | 48 | 3 | 144 | — | — | 37 | — | — | house fndn, 2 × 2 |
| OC SJP SJP 129 | 6 | 11 | 5 | 55 | — | — | 37 | — | — | |
| OC SJP SJP 129 | 7 | 7 | 4 | 28 | — | — | 37 | — | — | |
| OC SJP SJP 129 | 8 | 13 | 13 | 169 | — | — | 37 | — | — | |

# Appendix VII. Ejutla Architectural Data

This appendix includes details on all structures (mounds), house foundations, plazas, and walls mapped during the Ejutla Valley settlement pattern survey. For each appendix, the architectural features are listed by field site number. All measurements are in meters (m, $m^2$, or $m^3$). 1 in the SC column indicates that the architectural feature is single component. Phases of occupation are indicated by phase component numbers.

We use the following abbreviations in the comments column of each appendix: building stone = bldg stone, plaster floor(s) = plstr flr(s), construction = constr, natural = nat, structure(s) = str(s), house foundation(s) = house fndn(s).

## Appendix VII.A. Structure Details

| Field site no. | St no. | Base NS | Base EW | Top NS | Top EW | Height | Volume | SC | EF | Ros | EI | Phase component nos. LI | II | IIIA | IV | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 1 | 1N | 18 | 42 | 9 | 21 | 4.0 | 1,764 | 1 | — | — | — | — | — | — | — | 218 | ballcourt, stone constr |
| EJ CA CA 1 | 1S | 14 | 40 | 2 | 22 | 3.0 | 1,522 | 1 | — | — | — | — | — | — | — | 218 | ballcourt, stone constr |
| EJ CA CA 1 | 1E | 26 | 6 | 25 | 1.5 | 3.0 | 270 | 1 | — | — | — | — | — | — | — | 218 | ballcourt, stone constr |
| EJ CA CA 1 | 1W | ? | ? | ? | ? | ? | ? | 1 | — | — | — | — | — | — | — | 218 | ballcourt, destroyed, probably similar to 1E |
| EJ CA CA 1 | 2 | 32 | 12 | 24 | 3 | 1.5 | 311 | 1 | — | — | — | — | — | — | — | 218 | |
| EJ CA CA 1 | 3 | 12 | 40 | 4 | 40 | 1.0 | 306 | 1 | — | — | — | — | — | — | — | 218 | |
| EJ CA CA 1 | 4 | 36 | 15 | 21 | 2.5 | 2.5 | 634 | 1 | — | — | — | — | — | — | — | 218 | stone constr |
| EJ CA CA 1 | P4W | 8 | 48 | 2 | 45 | 4.0 | 880 | 0 | — | — | — | — | — | — | 23 | 218 | on N edge of platform 4 |
| EJ CA CA 1 | 5N | 9 | 24 | 2 | 21 | 2.2 | 265 | 0 | — | — | — | — | — | — | 23 | 218 | ballcourt |
| EJ CA CA 1 | 5S | 11 | 25 | 2 | 20 | 3.0 | 420 | 0 | — | — | — | — | — | — | 23 | 218 | ballcourt |
| EJ CA CA 1 | 5E | 19 | 2 | 18 | 1.5 | 1.0 | 32 | 0 | — | — | — | — | — | — | 23 | 218 | ballcourt |
| EJ CA CA 1 | 5W | ? | ? | ? | ? | ? | ? | 0 | — | — | — | — | — | — | 23 | 218 | ballcourt, destroyed |
| EJ CA CA 1 | 6 | 7 | 25 | 5 | 7 | 0.5 | 48 | 1 | — | — | — | — | — | — | — | 218 | built on nat rock outcrop |
| EJ CA CA 1 | 7 | 15 | 14 | 5 | 8 | 0.8 | 85 | 0 | — | — | — | — | — | 91 | 24 | 218 | built on nat rock outcrop |
| EJ CA CA 1 | P1 | 45 | 65 | 45 | 65 | 0.5 | 1,463 | 0 | — | — | — | — | — | — | 23 | 218 | plowed, may have had 2 strs |
| EJ CA CA 1 | P2 | 28 | 42 | 28 | 42 | 0.5 | 588 | 0 | — | — | — | — | — | — | 23 | 218 | |
| EJ CA CA 1 | P3 | 15 | 24 | 15 | 24 | 0.5 | 180 | 1 | — | — | — | — | — | — | — | 218 | has house foundation |
| EJ CA CA 1 | P4 | 39 | 48 | 39 | 48 | 4.0 | 7,488 | 0 | — | — | — | — | — | — | 23 | 218 | wall on N edge |
| EJ CA CA 1 | P5 | 23 | 29 | 23 | 29 | 1.5 | 1,000 | 0 | — | — | — | — | — | — | 26 | 218 | |
| EJ CA CA 1 | P6 | 21 | 26 | 13 | 17 | 2.0 | 743 | 0 | — | — | — | — | — | — | 26 | 218 | |
| EJ CA CA 18 | 1 | 15 | 13 | 7 | 6 | 1.5 | 164 | 1 | — | — | — | — | — | 134 | — | — | stone wall on top of W edge |
| EJ CA CA 18 | 2 | 15 | 17 | 7 | 8 | 0.8 | 108 | 1 | — | — | — | — | — | 134 | — | — | no bldg stone |
| EJ EJ CHI 7 | 1 | 14 | 12 | 4.2 | 2.8 | 1.5 | 112 | 1 | — | — | — | — | — | — | — | 30 | |
| EJ EJ EA 6 | 1 | 5 | 6 | 3 | 5 | 0.8 | 17 | 1 | — | — | — | — | — | — | — | 320 | |
| EJ EJ EA 6 | P1 | 53 | 27 | 23 | 23 | 2.4 | 2,264 | 1 | — | — | — | — | — | — | — | 320 | bldg stone |
| EJ EJ EA 6 | P2 | 15 | 25 | 12 | 20 | 2.0 | 604 | 1 | — | — | — | — | — | — | — | 320 | built up nat outcrop |
| EJ EJ EJ 1 | 1 | 40 | 40 | 20 | 20 | 11.0 | 10,267 | 0 | — | — | — | 37 | 16 | 74 | — | 189 | in houselot, badly destroyed, 1 plstr flr, adobe constr |
| EJ EJ EJ 1 | 2 | 30 | 60 | 20 | 40 | 8.0 | 10,133 | 0 | — | — | — | 37 | 16 | 74 | — | 189 | in houselot, badly destroyed, 4 plstr flrs, adobe bricks |
| EJ EJ EJ 1 | P3 | 50 | 50 | 40 | 40 | 3.0 | 6,100 | 0 | — | — | — | 37 | 16 | 74 | — | 189 | in houselot, estimates |
| EJ EJ EJ 1 | P4 | 50 | 90 | 30 | 70 | 3.0 | 9,674 | 0 | — | — | 11 | 37 | 16 | 74 | — | 189 | in houselot, estimates |
| EJ EJ EJ 1 | 5 | 69 | 65 | 25 | 40 | 3.0 | 7,603 | 0 | — | — | 10 | 37 | 16 | 74 | — | 189 | expanded nat outcrop |
| EJ EJ EJ 1 | 6 | 25 | 30 | 10 | 12 | 4.0 | 1,560 | 0 | — | — | — | 37 | 16 | 74 | — | 189 | 2 plstr flrs |
| EJ EJ EJ 1 | 7 | 30 | 20 | 15 | 15 | 8.0 | 3,180 | 0 | — | — | — | 37 | 16 | — | — | 189 | estimates, 3 plstr flrs |
| EJ EJ EJ 1 | 8 | 10 | 10 | ? | ? | ? | ? | 0 | — | — | 11 | 37 | 16 | 74 | — | 189 | too destroyed for complete measurements |
| EJ EJ EJ 1 | 9 | 15 | 20 | ? | ? | ? | ? | 0 | — | — | 11 | 37 | 16 | 74 | — | 189 | too destroyed for complete measurements |
| EJ EJ EJ 1 | 10 | ? | ? | ? | ? | ? | ? | 0 | — | — | — | 37 | 16 | — | — | 189 | no measurements |
| EJ EJ EJ 1 | 11 | ? | ? | ? | ? | ? | ? | 0 | — | — | — | 37 | 16 | 74 | — | 189 | no measurements |
| EJ EJ EJ 1 | 12 | ? | ? | ? | ? | ? | ? | 0 | — | — | — | 37 | 16 | 74 | — | 189 | no measurements |
| EJ EJ EJ 2 | 1 | 30 | 17 | 11 | 4 | 0.8 | 174 | 0 | — | — | — | — | — | 53 | — | 172 | bldg stone |
| EJ EJ EJ 3 | 1 | 15 | 14 | 5 | 6 | 1.0 | 106 | 0 | — | — | — | — | — | 78 | — | 198 | |
| EJ EJ EJ 40 | 1 | 10.5 | 21.5 | 6 | 20 | 1.5 | 255 | | — | — | — | — | — | — | — | — | no ceramics |
| EJ EJ EJ 42 | P1 | 185 | 40 | 85 | 22 | 3.5 | 15,155 | 0 | — | — | — | 53 | 35 | 124 | 48 | 304 | |
| EJ EJ EV 2 | 1 | 8 | 34 | 6 | 28 | 1.5 | 596 | 0 | — | — | — | — | — | — | 2 | 69 | forms L-shaped structure with str 1ex |
| EJ EJ EV 2 | 1ex | 19 | 8 | 19 | 6 | 1.5 | — | | — | — | — | — | — | — | 2 | 69 | |
| EJ EJ EV 2 | 2 | 31 | 4 | 28 | 2 | 0.7 | 61 | 0 | — | — | — | — | — | — | 2 | 69 | |
| EJ EJ EV 2 | 3 | 6 | 21 | 3 | 18 | 1.4 | 122 | 0 | — | — | — | — | — | — | 2 | 69 | |
| EJ EJ EV 2 | 4a | 10 | 35 | 2 | 22 | 1.7 | 294 | 0 | — | — | — | — | — | — | 2 | 69 | ballcourt, only 3 real strs |
| EJ EJ EV 2 | 4b | 20 | 10 | 16 | 6 | 3.8 | 550 | 0 | — | — | — | — | — | — | 2 | 69 | |
| EJ EJ EV 2 | 4c | 20 | 7 | 16 | 4 | 3.2 | 319 | 0 | — | — | — | — | — | — | 2 | 69 | |
| EJ EJ EV 2 | 4d | ? | ? | ? | ? | ? | ? | 0 | — | — | — | — | — | — | 2 | 69 | absent or too destroyed to measure |
| EJ EJ EV 2 | 5 | 26 | 27 | 4 | 7 | 1.6 | 464 | 1 | — | — | — | — | — | — | — | 69 | |
| EJ EJ EV 2 | 6w | 28 | 8 | 16 | 5 | 4.2 | 613 | 1 | — | — | — | — | — | — | — | 69 | ballcourt with only 2 smounds |

## Appendix VII.A. *Continued.*

| Field site no. | St no. | Base NS | Base EW | Top NS | Top EW | Height | Volume | SC | Phase component nos. EF | Ros | EI | LI | II | IIIA | IV | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EJ EJ EV 2 | 6e | 28 | 8 | 16 | 5 | 3.5 | 511 | 1 | — | — | — | — | — | — | — | 69 | |
| EJ EJ EV 2 | 6s | ? | ? | ? | ? | ? | ? | 1 | — | — | — | — | — | — | — | — | |
| EJ EJ EV 2 | 7 | 29.5 | 5 | 29.5 | 5 | 0.5 | 73 | 1 | — | — | — | — | — | — | — | 69 | forms low wall with str 7ex |
| EJ EJ EV 2 | 7ex | 4.5 | 20 | 4.5 | 20 | 0.5 | 45 | 1 | — | — | — | — | — | — | — | 69 | |
| EJ EJ EV 2 | 8 | 32 | 12 | 23 | 4 | 1.6 | 518 | 0 | — | — | — | — | 3 | 14 | 2 | 69 | |
| EJ EJ LO 5 | 1 | 8 | 7 | 2 | 2 | 0.5 | 12 | 1 | — | — | — | 28 | — | — | — | — | |
| EJ EJ LO 5 | 2 | 9 | 10 | 2 | 2 | 0.5 | 19 | 1 | — | — | — | 28 | — | — | — | — | |
| EJ EJ LO 5 | 3 | 14 | 20 | 5 | 8 | 2.5 | 355 | 1 | — | — | — | 28 | — | — | — | — | |
| EJ EJ LO 11 | 3 | 6 | 14 | 3 | 6 | 2.0 | 94 | 0 | — | — | — | — | — | 54 | — | 156 | strs 1 and 2 coded as house fndns |
| EJ EJ LOG 2 | 1 | 17 | 13 | 6 | 7 | 1.0 | 127 | 1 | — | — | — | 3 | — | — | — | — | |
| EJ EJ MT 10 | 1 | 22 | 8 | 18 | 7 | 1.0 | 176 | 1 | — | — | — | — | — | — | — | 49 | lots of bldg stone |
| EJ EJ MT 10 | 2 | 5 | 24 | 4 | 19 | 1.0 | 120 | 1 | — | — | — | — | — | — | — | 49 | may be a wall |
| EJ EJ MT 10 | 3 | 25 | 7 | 18 | 6 | 1.0 | 175 | 1 | — | — | — | — | — | — | — | 49 | bldg stone |
| EJ EJ MT 11 | 1 | 7 | 17 | 5 | 14 | 1.0 | 93 | 1 | — | — | — | — | — | — | — | 50 | |
| EJ EJ MT 11 | 2 | 13 | 20 | 9 | 15 | 1.5 | 291 | 1 | — | — | — | — | — | — | — | 50 | |
| EJ EJ SCN 1 | 1 | 12 | 7 | 6 | 3 | 0.5 | 23 | 0 | — | — | — | — | — | 95 | — | 229 | has rock wall, built on nat outcrop |
| EJ EJ SCN 1 | 2 | 20 | 14 | 17 | 5 | 1.5 | 260 | 0 | — | — | — | — | — | 95 | — | 229 | has cut stone wall |
| EJ EJ SCN 3 | 1 | 13.5 | 18 | 13.5 | 18 | 0.5 | 121 | 1 | — | — | — | — | — | — | — | 227 | built on nat outcrop, str wall and 2 corners visible |
| EJ EJ SCN 11 | 1 | 8 | 9 | 5 | 5.5 | 0.5 | 23 | 1 | — | — | — | — | 19 | — | — | — | wall of stones on E |
| EJ EJ SCN 12 | 1 | 11 | 10 | 8 | 7 | 0.5 | 41 | 1 | — | — | — | — | — | — | — | 251 | built on nat outcrop |
| EJ EJ SJ 1 | 1 | 21 | 19 | 4 | 4 | 2.5 | 412 | 1 | — | — | — | — | — | — | 29 | — | small str on top, plstr flr |
| EJ EJ SJ 2 | 1 | 32 | 34 | 7.5 | 2.5 | 3.5 | 1,446 | 1 | — | — | — | — | — | 31 | — | — | on platform 1 |
| EJ EJ SJ 2 | 2 | 31 | 35 | 6.5 | 9 | 1.5 | 698 | 0 | — | — | — | — | — | 31 | — | 116 | on platform 1 |
| EJ EJ SJ 2 | 3 | 14 | 20 | 4.5 | 7 | 0.3 | 34 | 0 | — | — | — | — | — | 31 | 9 | 116 | on platform 1 |
| EJ EJ SJ 2 | 4 | 24 | 20 | 6 | 6 | 1.0 | 216 | 1 | — | — | — | — | — | 31 | — | — | |
| EJ EJ SJ 2 | 5 | 19 | 16 | 5 | 4 | 0.7 | 94 | 0 | — | — | — | — | — | 31 | — | 116 | |
| EJ EJ SJ 2 | 6 | 21 | 20 | 4 | 3 | 2.0 | 335 | 0 | — | — | — | — | — | 31 | — | 116 | |
| EJ EJ SJ 2 | 7 | 18 | 15 | 5 | 5 | 1.3 | 157 | 0 | — | — | — | — | — | 31 | — | 116 | |
| EJ EJ SJ 2 | 8 | 17 | 13 | 17 | 13 | 0.3 | 55 | 0 | — | — | — | — | — | 31 | 9 | — | |
| EJ EJ SJ 2 | 9 | 16 | 13 | 6 | 5 | 1.5 | 158 | 0 | — | — | — | — | — | 31 | — | 116 | |
| EJ EJ SJ 2 | P1 | 80 | 80 | 80 | 80 | 1.8 | 11,520 | 1 | — | — | — | — | — | 31 | — | — | |
| EJ EJ SJ 6 | 1 | 21 | 28 | 4 | 5 | 3.0 | 716 | 1 | — | — | — | — | — | 24 | — | — | plstr flrs |
| EJ EJ SJ 6 | 2 | 32 | 22 | 5 | 3 | 3.5 | 959 | 1 | — | — | — | — | — | 24 | — | — | connected to str 3 by wall |
| EJ EJ SJ 6 | 3 | 26 | 40 | 10 | 23 | 2.5 | 1,466 | 1 | — | — | — | — | — | 24 | — | — | connected to str 2 by wall |
| EJ EJ SJ 6 | 4 | 41 | 25 | 14 | 6 | 2.0 | 897 | 1 | — | — | — | — | — | 24 | — | — | entryway between strs 3 and 4 |
| EJ EJ SJ 6 | 5 | 46 | 32 | 10 | 10 | 2.5 | 1,630 | 1 | — | — | — | — | — | 24 | — | — | plstr flr |
| EJ EJ SJ 6 | 6 | 36 | 31 | 8.7 | 11.5 | 2.5 | 1,292 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ EJ SJ 6 | 7 | 33 | 25 | 8 | 6 | 2.0 | 715 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ EJ SJ 6 | 8 | 24 | 20 | 7 | 6 | 0.5 | 111 | 0 | — | — | — | — | — | 24 | 7 | — | |
| EJ EJ SJ 6 | 9 | 31 | 23 | 8 | 5 | 6.0 | 184 | 1 | — | — | — | — | — | 24 | — | — | stone/rubble fill |
| EJ EJ SJ 6 | 10 | 23 | 39 | 6 | 6 | 3.0 | 1,113 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ EJ SJ 6 | 11 | 20 | 13 | 4 | 3.5 | 0.3 | 28 | 1 | — | — | — | — | — | 24 | — | — | plstr flr |
| EJ EJ SJ 6 | 12 | 27 | 36 | 5 | 13 | 1.5 | 644 | 0 | — | — | — | — | — | 24 | 7 | — | |
| EJ EJ SJ 6 | 13 | 34 | 34 | 5 | 6 | 2.3 | 1,029 | 0 | — | — | — | — | — | 24 | 7 | — | |
| EJ EJ SJ 6 | 14 | 25 | 27 | 5 | 7 | 1.5 | 432 | 1 | — | — | — | — | — | 24 | — | — | plstr flr, looter's pit |
| EJ EJ SJ 6 | 15 | 43 | 38 | 15 | 10 | 2.0 | 1,519 | 1 | — | — | — | — | — | 24 | — | — | bldg stone, plstr flr |
| EJ EJ SJ 6 | 16 | 22 | 17 | 5 | 6 | 1.0 | 170 | 0 | — | — | — | — | — | 24 | 7 | — | |
| EJ EJ SJ 6 | 17 | 26 | 24 | 8 | 5 | 0.8 | 205 | 0 | — | — | — | — | — | 24 | 7 | — | |
| EJ EJ SJ 6 | 18 | 16 | 21 | 4 | 5 | 2.0 | 292 | 0 | — | — | — | — | — | 24 | 7 | — | plstr flr |
| EJ EJ SJ 6 | 19 | 20 | 20 | 5 | 5 | 2.0 | 350 | 0 | — | — | — | — | — | 24 | 7 | — | bldg stone, plstr flr |
| EJ EJ SJ 6 | 20 | 19 | 20 | 4 | 6 | 1.0 | 166 | 0 | — | — | — | — | — | 24 | 7 | — | plstr flr |
| EJ EJ SJ 10 | 1 | 20 | 25 | 2 | 10 | 3.0 | 620 | 0 | — | — | 8 | 30 | 12 | — | — | — | large stone blocks |
| EJ EJ SJ 10 | 2 | 26 | 20 | 4 | 4 | 2.0 | 418 | 0 | — | — | 8 | 30 | 12 | — | — | — | |
| EJ EJ SJ 10 | 3 | 14 | 12 | 5 | 3 | 1.0 | 78 | 0 | — | — | 8 | 30 | 12 | — | — | — | plowed down |
| EJ EJ SJ 10 | 4 | 20 | 21 | 7 | 7 | 1.5 | 306 | 0 | — | — | 8 | 30 | 12 | — | — | — | plowed down, looter's pits, large stone blocks |
| EJ EJ SJ 10 | P1 | 15 | 15 | 15 | 15 | 1.0 | 225 | 0 | — | — | 8 | 30 | 12 | — | — | — | estimates |
| EJ EJ SMC 6 | 1 | 22 | 8 | 20 | 7 | 2.0 | 315 | 0 | — | — | — | — | 1 | 9 | — | 44 | |
| EJ EJ SMC 6 | 2 | 8 | 10 | | | 1.0 | 60 | 0 | — | — | — | — | 1 | 9 | — | 44 | built into hill |
| EJ EJ SMC 6 | 3 | 7 | 6 | 2.5 | 2.5 | 1.1 | 24 | 1 | — | — | — | — | — | 9 | — | — | looter's pits |
| EJ EJ SMC 6 | 4 | 6.5 | 9 | | | 1.1 | 66 | 1 | — | — | — | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 5 | 11 | 11 | 7 | 8 | 0.5 | 43 | 1 | — | — | — | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 6 | 18 | 17.5 | 5.5 | 5.5 | 1.8 | 258 | 1 | — | — | — | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 7 | 12 | 12 | 5 | 5 | 2.5 | 191 | 1 | — | — | — | — | — | 9 | — | — | looted |
| EJ EJ SMC 7 | 1 | 31 | 36 | 5 | 5 | 5.0 | 2,180 | 0 | 1 | — | 2 | 4 | 2 | 11 | — | — | |
| EJ EJ SMC 7 | 2 | 24 | 22 | 6 | 8 | 3.0 | 735 | 0 | 1 | — | 2 | 4 | 2 | 11 | — | — | bits of plaster |
| EJ EJ SMC 7 | 3 | 26 | 27 | 15 | 16 | 2.0 | 1,111 | 0 | 1 | 4 | 2 | 4 | 2 | — | — | 59 | |
| EJ EJ SO 4 | 1 | 22.5 | 21 | 11 | 9 | 0.8 | 196 | 0 | — | — | 18 | 54 | — | — | — | — | |

| Field site no. | St no. | Base NS | Base EW | Top NS | Top EW | Height | Volume | SC | EF | Ros | EI | Phase component nos. LI | II | IIIA | IV | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EJ LC AB 1 | 1 | 7 | 19 | 5 | 15 | 1.5 | 154 | 0 | — | — | — | — | — | 112 | — | 267 | bldg stone |
| EJ LC AB 1 | 2 | 20 | 20 | 15 | 15 | 1.0 | 305 | 0 | — | — | — | — | — | 112 | — | 267 | bldg stone |
| EJ LC AB 1 | 3 | 12 | 12 | 8 | 8 | 0.4 | 45 | 0 | — | — | — | — | — | 112 | — | 267 | bldg stone, heavily plowed |
| EJ LC AE 7 | 1 | 11 | 25 | 4.5 | 10 | 1.3 | 180 | 1 | — | — | — | — | — | — | — | 260 | abuts plaza |
| EJ LC AE 7 | P1 | 21 | 8 | 18 | 6 | 0.5 | 68 | 1 | — | — | — | — | — | — | — | 260 | poss house foundation on south side |
| EJ LC AE 7 | WA | 18 | 3 | 17 | 2 | 1.0 | 44 | 1 | — | — | — | — | — | — | — | 260 | orig. coded as wall |
| EJ LC AE 7 | WB | 3 | 22 | 2 | 21 | 1.5 | 81 | 1 | — | — | — | — | — | — | — | 260 | orig. coded as wall |
| EJ LC AE 7 | WC | 15 | 5 | 14 | 3 | 1.0 | 59 | 1 | — | — | — | — | — | — | — | 260 | orig. coded as wall |
| EJ LC LC 8 | 1 | 19 | 19 | 5 | 4 | 2.0 | 311 | 1 | — | — | — | — | — | — | 47 | — | |
| EJ LC LC 8 | 2N | 11 | 24 | 2 | 7 | 1.0 | 113 | 1 | — | — | — | — | — | — | 47 | — | part of ballcourt |
| EJ LC LC 8 | 2E | 8 | 3 | 6 | 1 | 1.0 | 14 | 1 | — | — | — | — | — | — | 47 | — | part of ballcourt |
| EJ LC LC 8 | 2W | ? | ? | ? | ? | ? | ? | 1 | — | — | — | — | — | — | 47 | — | destroyed |
| EJ LC LC 8 | 3 | 35 | 39 | 8 | 10 | 5.0 | 2,959 | 1 | — | — | — | — | — | — | 47 | — | forms S side of ballcourt, looted, stone/adobe constr |
| EJ LC LC 8 | 4 | 24 | 15 | 6 | 4 | 2.3 | 358 | 1 | — | — | — | — | — | — | 47 | — | looter's pit |
| EJ LC LC 8 | P1 | 16 | 21 | 7 | 10 | 2.0 | 373 | 1 | — | — | — | — | — | — | 47 | — | plstr flr |
| EJ LC LC 13 | 2 | 4 | 6 | 3 | 5 | 0.5 | 10 | 0 | — | — | — | — | 21 | — | — | 265 | has dividing wall on E side |
| EJ LC LC 14 | 1 | 5 | 9 | 4 | 8 | 0.5 | 18 | 1 | — | — | — | — | — | — | — | 262 | |
| EJ LC LL 1 | 1 | 18 | 25 | 5 | 5 | 3.0 | 581 | 0 | — | — | — | 63 | 26 | — | — | — | |
| EJ LC LL 1 | 2 | 19 | 25 | 5 | 4 | 2.1 | 419 | 0 | — | — | — | 63 | 26 | — | — | — | |
| EJ LC LL 2 | 1 | 35 | 27 | 12 | 11 | 5.0 | 2,384 | 1 | — | — | — | — | — | 115 | — | — | on plaza A, looter's pit |
| EJ LC LL 2 | 2 | 10 | 15 | 5 | 9 | 1.5 | 139 | 1 | — | — | — | — | — | 115 | — | — | lots of rubble, plstr flr, looter's pit |
| EJ LC LL 2 | 3 | 25 | 24 | 11 | 5 | 1.5 | 418 | 1 | — | — | — | — | — | 115 | — | — | looter's pit, wall extends to S & connects with str 5B |
| EJ LC LL 2 | 4 | 16 | 23 | 10 | 4 | 2.5 | 441 | 1 | — | — | — | — | — | 115 | — | — | attached wall extends to S |
| EJ LC LL 2 | 5A | 20 | 12 | 9 | 3 | 1.0 | 116 | 1 | — | — | — | — | — | 115 | — | — | connects sts 1 and 5B |
| EJ LC LL 2 | 5B | 10 | 42.5 | 5 | 40 | 1.0 | 306 | 1 | — | — | — | — | — | 115 | — | — | connects str 5A and wall from str 3 |
| EJ LC LL 2 | 6 | 30 | 23 | 7 | 5 | 1.0 | 293 | 1 | — | — | — | — | — | 115 | — | — | |
| EJ LC LL 2 | 7 | 25 | 20 | 8 | 6 | 2.0 | 469 | 1 | — | — | — | — | — | 115 | — | — | looter's pit, possible tomb |
| EJ LC LL 2 | 8 | 19 | 20 | 4 | 5 | 3.0 | 487 | 1 | — | — | — | — | — | 115 | — | — | lots of rock rubble, looter's pit |
| EJ LC LL 2 | 9 | 16 | 12 | 5 | 4 | 1.5 | 137 | 1 | — | — | — | — | — | 115 | — | — | lots of rock rubble |
| EJ LC LL 2 | 10 | 25 | 20 | 6 | 4 | 1.5 | 317 | 1 | — | — | — | — | — | 115 | — | — | lots of rock rubble |
| EJ LC LL 2 | 11 | 11 | 17 | 5.5 | 8.5 | 0.5 | 56 | 0 | — | — | — | — | — | 115 | — | 291 | |
| EJ LC RE 1 | 1 | 12 | 12 | 7 | 7 | 1.5 | 139 | 1 | — | — | — | — | — | — | 46 | — | unshaped bldg stone |
| EJ LP LG 1 | 1 | 31 | 33 | 10 | 7 | 6.0 | 2,721 | 1 | — | — | — | — | — | 24 | — | — | plstr flr, rubble fill, looter's pit |
| EJ LP LG 1 | P1 | 80 | 76 | 64 | 40 | 2.0 | 8,390 | 1 | — | — | — | — | — | 24 | — | — | supports strs 1–4 |
| EJ LP LG 1 | 2 | 19 | 11 | 19 | 5 | 2.0 | 241 | 1 | — | — | — | — | — | 24 | — | — | looter's pit |
| EJ LP LG 1 | 3 | 29 | 16 | 19 | 3 | 1.0 | 228 | 1 | — | — | — | — | — | 24 | — | — | looter's pit |
| EJ LP LG 1 | 4 | 19 | 41 | 4 | 25 | 1.0 | 386 | 1 | — | — | — | — | — | 24 | — | — | bldg stone |
| EJ LP LG 1 | 5 | 25 | 11 | 9 | 3 | 0.5 | 65 | 1 | — | — | — | — | — | 24 | — | — | may be part of ballcourt with str 6, bldg stone |
| EJ LP LG 1 | 6 | 24 | 10 | 13 | 5 | 0.5 | 72 | 1 | — | — | — | — | — | 24 | — | — | may be part of ballcourt with str 5, bldg stone |
| EJ LP LG 1 | 7 | 21 | 30 | 14 | 11 | 2.0 | 730 | 1 | — | — | — | — | — | 24 | — | — | lots of bldg stone |
| EJ LP LG 1 | 8 | 31 | 21 | 5 | 7 | 3.0 | 837 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ LP LG 1 | 9 | 20 | 14 | 4 | 6 | 1.3 | 161 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ LP LG 1 | 10 | 25 | 29 | 8 | 15 | 1.0 | 380 | 1 | — | — | — | — | — | 24 | — | — | bldg stone |
| EJ LP LG 1 | 11 | 32 | 41 | 7 | 15 | 3.0 | 1,788 | 1 | — | — | — | — | — | 24 | — | — | mortar, looter's pit |
| EJ LP LG 1 | 12 | 30 | 28 | 7 | 12 | 4.5 | 1,784 | 1 | — | — | — | — | — | 24 | — | — | bldg stone, looter's pit |
| EJ LP LG 1 | 13 | 26 | 35 | 6 | 11 | 1.5 | 611 | 1 | — | — | — | — | — | 24 | — | — | bldg stone |
| EJ LP LG 1 | 14 | 42 | 34 | 22 | 26 | 1.8 | 1,694 | 1 | — | — | — | — | — | 24 | — | — | bldg stone |
| EJ LP LG 1 | 15 | 10 | 28 | 1 | 11 | 0.5 | 58 | 1 | — | — | — | — | — | 24 | — | — | could be a wall |
| EJ LP LG 1 | 16 | 34 | 32 | 10 | 26 | 1.0 | 627 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ LP LG 1 | 17 | 16 | 26 | 10 | 16 | 0.5 | 139 | 1 | — | — | — | — | — | 24 | — | — | plowed down |
| EJ LP LG 1 | 18 | 47 | 45 | 15 | 15 | 0.5 | 505 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ LP LG 1 | 19 | 25 | 33 | 6 | 6 | 0.5 | 172 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ LP LG 1 | 20 | 43 | 45 | 9 | 15 | 1.0 | 860 | 0 | — | — | — | — | — | 24 | 8 | 112 | |
| EJ LP LG 1 | 21 | 30 | 23 | 9 | 9 | 1.0 | 336 | 0 | — | — | — | — | — | 24 | 8 | 112 | |
| EJ LP LG 1 | 22 | 29 | 28 | 5 | 5 | 1.5 | 444 | 1 | — | — | — | — | — | 24 | — | — | |
| EJ LP LG 1 | 23 | 20 | 20 | 8 | 8 | 0.5 | 104 | 1 | — | — | — | — | — | 24 | — | — | bldg stone |
| EJ LP LP 2 | 1 | 14 | 21 | 7 | 7 | 1.0 | 154 | 1 | — | — | — | 9 | — | — | — | — | bldg stone, plstr flr |
| EJ LP LP 2 | 2 | 23 | 26 | 8 | 10 | 1.0 | 299 | 1 | — | — | — | 9 | — | — | — | — | bldg stone, looter's pit |
| EJ LP LP 2 | 3 | 16 | 22 | 3.5 | 7 | 1.0 | 156 | 1 | — | — | — | 9 | — | — | — | — | |
| EJ LP LP 2 | 4 | ? | ? | ? | ? | ? | ? | 1 | — | — | — | 9 | — | — | — | — | too destroyed to measure, bldg stone, plstr flr |
| EJ SAA SAA 10 | 1 | 27 | 23 | 5 | 3 | 2.5 | 608 | 0 | — | — | — | 49 | 31 | — | — | 295 | 5 plstr flrs, tomb, looter's pit |
| EJ SAA SAA 15 | 1 | 17 | 14 | 5 | 3 | 1.5 | 156 | 0 | — | — | — | 58 | 39 | 130 | — | — | looter's pit |

## Appendix VII.A. *Continued.*

| Field site no. | St no. | Base NS | Base EW | Top NS | Top EW | Height | Volume | SC | EF | Ros | EI | Phase component nos. LI | II | IIIA | IV | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EJ SAA SAA 15 | 2 | 30 | 19 | 24 | 3 | 0.3 | 70 | 0 | — | — | — | 58 | 39 | 130 | — | — | lots of plaster |
| EJ SAA SAA 15 | 3 | 25 | 47 | 17 | 40 | 1.8 | 1,604 | 0 | — | — | — | 58 | 39 | 130 | — | — | |
| EJ SAA SAA 15 | 4 | 27 | 28 | 5 | 2 | 4.5 | 1,278 | 0 | 3 | — | — | 58 | 39 | 130 | — | — | |
| EJ SAA SAA 15 | 5 | 33 | 30 | 9.5 | 8.5 | 6.0 | 2,704 | 0 | — | — | 20 | 58 | 39 | 130 | 51 | — | bldg stone, heavy looting |
| EJ SAA SAA 15 | 6 | 15 | 15 | 5 | 5 | 1.0 | 108 | 0 | — | — | 20 | 58 | 39 | 130 | 51 | — | looter's pit |
| EJ SAA SAA 15 | 7 | 29 | 15 | 14 | 3 | 1.0 | 204 | 0 | — | — | — | 58 | 39 | 130 | — | — | heavily plowed |
| EJ SAA SAA 15 | 8 | 23 | 12 | 4 | 1.5 | 2.0 | 215 | 0 | — | — | — | — | 39 | 130 | — | — | tomb |
| EJ SAA SAA 15 | P1 | 41.5 | 52 | 41.5 | 52 | 2.0 | 4,316 | 0 | — | — | 20 | 58 | 39 | 130 | 51 | — | under strs 5 and 6, plaza B |
| EJ SAA SAA 15 | P2 | 30 | 43 | 30 | 43 | 5.0 | 6,450 | 0 | — | — | — | 58 | 39 | 130 | — | — | under strs 1 and 2 |
| EJ SAZ SAZ 9 | 1 | 23 | 23 | 14 | 7 | 3.0 | 855 | 0 | — | — | — | 39 | — | 107 | — | 243 | 2 plstr flrs, bldg stone, looter's pits |
| EJ SAZ SAZ 9 | 2 | 24 | 11 | 12 | 4 | 2.0 | 283 | 0 | — | — | — | 39 | — | 107 | — | 243 | plstr flr, looter's pit |
| EJ SAZ SAZ 9 | 3 | 8 | 22 | 3 | 20 | 1.8 | 197 | 0 | — | — | — | 39 | — | 107 | — | 243 | bldg stone, looting, possible ballcourt |
| EJ SAZ SAZ 9 | 4 | 7 | 26 | 1.5 | 20 | 2.0 | 191 | 0 | — | — | — | 39 | — | 107 | — | 243 | cut stone, bldg stone, possible ballcourt |
| EJ SML SML 1 | 1 | 13 | 16 | 3.5 | 5 | 3.0 | 286 | 1 | — | — | — | — | — | 104 | — | — | |
| EJ SML SML 11 | 1 | 10 | 7.4 | 4 | 2 | 2.0 | 71 | 1 | — | — | — | — | — | 96 | — | — | bldg stone |
| EJ SML SML 12 | 1 | 24 | 35 | 8 | 12 | 2.0 | 817 | 1 | — | — | — | — | — | — | 39 | — | plstr flr, may have been a tomb |
| EJ SML SML 12 | 2 | 10 | 23 | 1.5 | 19 | 3.0 | 340 | 1 | — | — | — | — | — | — | 39 | — | |
| EJ SML SML 12 | 3 | 30 | 20 | 10 | 7 | 4.0 | 1,167 | 1 | — | — | — | — | — | — | 39 | — | plstr flr |
| EJ SML SML 12 | P1 | 65 | 21 | 60 | 20 | 1.0 | 1,282 | 1 | — | — | — | — | — | — | 39 | — | plstr flr |
| EJ SML SML 12 | P2 | 73 | 68 | 68 | 63 | 1.0 | 4,620 | 1 | — | — | — | — | — | — | 39 | — | |
| EJ SML SML 12 | P3 | 44 | 25 | 44 | 25 | 0.5 | 550 | 1 | — | — | — | — | — | — | 39 | — | |
| EJ SML SML 16 | P1 | 29 | 15 | 29 | 15 | 0.5 | 218 | 0 | — | — | — | — | — | 109 | — | 257 | |
| EJ SML SML 16 | P2 | 25 | 20 | 25 | 20 | 0.3 | 125 | 0 | — | — | — | — | — | 109 | — | 257 | |
| EJ SML SML 16 | P3 | 16 | 15 | 16 | 15 | 0.5 | 120 | 0 | — | — | — | — | — | 109 | — | 257 | |
| EJ SML SML 18 | 1 | 18 | 16 | 4 | 3 | 1.0 | 118 | 0 | — | — | — | — | — | 106 | — | 240 | plaster present |
| EJ SML SML 18 | 2 | 25 | 11 | 10 | 4 | 1.0 | 140 | 0 | — | — | — | — | — | 106 | — | 240 | |
| EJ SML SML 22 | 1 | 18 | 22 | 7 | 9 | 2.8 | 566 | 1 | — | — | — | — | — | — | 43 | — | bldg stone |
| EJ SML SML 22 | 2 | 12 | 10 | 8 | 7 | 1.0 | 86 | 1 | — | — | — | — | — | — | 43 | — | looter's pit |
| EJ SML SML 22 | 3 | 10 | 6 | 8 | 3 | 1.5 | 61 | 1 | — | — | — | — | — | — | 43 | — | |
| EJ SML SML 22 | 4 | 12 | 13 | 5 | 3 | 1.5 | 110 | 1 | — | — | — | — | — | — | 43 | — | |
| EJ SML SML 22 | 5 | 12 | 17 | 3 | 5 | 1.0 | 91 | 1 | — | — | — | — | — | — | 43 | — | |
| EJ TAN TAN 2 | 1 | 25 | 25 | 5 | 5 | 3.0 | 775 | 0 | — | — | — | 47 | 23 | — | — | 176 | plstr flr, adobe |
| EJ TAN TAN 2 | 2 | 23 | 24 | 8 | 9 | 1.8 | 501 | 0 | — | — | — | 51 | — | 117 | — | 176 | |
| EJ TAN TAN 2 | 3 | 38 | 40 | 23 | 24 | 2.8 | 3,309 | 0 | — | — | — | — | — | 57 | 10 | — | bldg stone |
| EJ TAN TAN 2 | 4 | 31 | 39 | 19 | 23 | 2.5 | 2,392 | 0 | — | — | — | — | — | 57 | 10 | — | |
| EJ YO YO 11 | 1 | 16 | 19 | 11 | 11 | 1.5 | 309 | 1 | — | — | — | 62 | — | — | — | — | stone rubble |
| EJ YO YO 11 | 3 | 8 | 6 | 5 | 3.5 | 0.5 | 16 | 1 | — | — | — | 62 | — | — | — | — | stone constr |
| EJ YO YO 12 | 1 | 18 | 12 | 9 | 6 | 2.0 | 252 | 0 | — | — | — | 61 | 44 | 132 | — | 350 | plstr flr, plowed down |
| EJ YO YO 12 | 2 | 27 | 33 | 16 | 20 | 0.8 | 437 | 0 | — | — | — | 61 | 44 | 132 | — | 350 | plowed down |
| EJ YO YO 12 | 3 | 26 | 12 | 22 | 8 | 2.0 | 482 | 0 | — | — | — | 61 | 44 | 132 | — | 350 | |
| EJ YO YO 12 | 4 | 7 | 24 | 4 | 14 | 0.5 | 55 | 0 | — | — | — | 61 | 44 | 132 | — | 350 | |
| EJ YO YO 12 | 5 | 12 | 15 | 2 | 5 | 0.7 | 54 | 0 | — | — | — | 61 | 44 | 132 | — | 350 | on platform 1 |
| EJ YO YO 12 | 6 | 15 | 17 | 2 | 6 | 1.6 | 338 | 0 | — | — | — | 61 | 44 | 132 | — | 350 | on platform 1 |
| EJ YO YO 12 | 7 | 27 | 7 | 15 | 1.5 | 2.0 | 139 | 0 | — | — | — | 61 | 44 | 132 | 52 | 350 | on platform 2 |
| EJ YO YO 12 | 8 | 18 | 20 | 8 | 8 | 1.5 | 288 | 0 | — | — | — | 61 | 44 | 132 | — | 350 | 3 plstr flrs, possible tomb, looter's pit |
| EJ YO YO 12 | P1 | 20 | 56 | 18 | 45 | 2.0 | 1,922 | 0 | — | — | — | 61 | 44 | 132 | — | 350 | base for strs 1 and 2 |
| EJ YO YO 12 | P2 | 86 | 29 | 81 | 22 | 2.0 | 4,218 | 0 | — | — | — | 61 | 44 | 132 | 52 | 350 | base for str 7 |
| OC OC BV 11 | 1 | 19 | 17 | 10 | 10 | 1.5 | 270 | 1 | — | — | — | — | — | 2 | — | — | 2 rows of stones on W side |
| OC OC BV 12 | 1 | 15 | 15 | 9 | 3 | 1.0 | 110 | 1 | — | — | — | — | — | — | — | 3 | stone walls on top |
| OC SJP SJP 108 | 5 | 29 | 17 | 17 | 7 | 4.0 | 1,139 | 0 | — | — | — | — | — | 34 | — | 132 | bldg stone, other strs coded as house fndns |
| OC SJP SJP 109 | 1 | 17 | 12 | 8 | 3 | 1.5 | 149 | 1 | — | — | — | — | — | 35 | — | — | |
| OC SJP SJP 109 | 2 | 10 | 26 | 4 | 18 | 1.5 | 234 | 1 | — | — | — | — | — | 35 | — | — | |
| OC SJP SJP 110 | 1 | 10 | 10 | 5 | 5 | 1.5 | 88 | 1 | — | — | — | — | — | 36 | — | — | |
| OC SJP SJP 111 | 1 | 3 | 3 | 2.5 | 2.5 | 0.8 | 28 | ? | — | — | — | — | — | — | — | — | rock constr, no ceramics |
| OC SJP SJP 129 | 1 | 23 | 23 | 4.5 | 8 | 1.0 | 234 | 1 | — | — | — | — | — | 37 | — | — | looter's pit |
| OC SJP SJP 129 | 2 | 21 | 14 | 15 | 3 | 3.5 | 530 | 1 | — | — | — | — | — | 37 | — | — | bldg stone, looter's pit |
| OC SJP SJP 129 | 3 | 9 | 4 | 9 | 3 | 0.8 | 24 | 1 | — | — | — | — | — | 37 | — | — | bldg stone |
| OC SJP SJP 129 | 4 | 8 | 20 | 3 | 8 | 1.5 | 123 | 1 | — | — | — | — | — | 37 | — | — | bldg stone, looter's pit |
| OC SJP SJP 129 | 5 | 19 | 2 | 19 | 2 | 0.8 | 28 | 1 | — | — | — | — | — | 37 | — | — | bldg stone, could be a wall |
| OC SJP SJP 129 | 6 | 20 | 14 | 12 | 10 | 5.0 | 972 | 1 | — | — | — | — | — | 37 | — | — | bldg stone, looter's pit |
| OC SJP SJP 129 | 7 | 12.5 | 7.5 | 10.5 | 5 | 3.5 | 252 | 1 | — | — | — | — | — | 37 | — | — | bldg stone, looter's pit |
| OC SJP SJP 129 | 8 | 10 | 14 | 4 | 5 | 1.0 | 72 | 1 | — | — | — | — | — | 37 | — | — | looter's pit |
| OC SJP SJP 129 | 9 | 19 | 22 | 7 | 10 | 4.0 | 879 | 1 | — | — | — | — | — | 37 | — | — | rock rubble on top |
| OC SJP SJP 129 | 10 | 16 | 19 | 5 | 3 | 4.0 | 515 | 1 | — | — | — | — | — | 37 | — | — | |

| Field site no. | St no. | Base NS | Base EW | Top NS | Top EW | Height | Volume | SC | EF | Ros | EI | Phase component nos. LI | II | IIIA | IV | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OC SJP SJP 129 | 11 | 10 | 14 | 3 | 9 | 2.5 | 190 | 1 | — | — | — | — | — | 37 | — | — | appears to be pathway between str 11 and 12 |
| OC SJP SJP 129 | 12 | 10 | 14 | 3 | 9 | 2.5 | 190 | 1 | — | — | — | — | — | 37 | — | — | |
| OC SJP SJP 129 | P1 | 21 | 5 | 21 | 5 | 1.0 | 420 | 1 | — | — | — | — | — | 37 | — | — | |

## Appendix VII.B. House Foundation Details

| Field site no. | HF no. | Length | Width | Area | SC | Phase component nos. LI | II | IIIA | IV | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 1 | 1 | 13.0 | 5.0 | 65.0 | 1 | — | — | — | — | 218 | on nat outcrop |
| EJ CA CA 1 | 2 | 6.0 | 2.5 | 15.0 | 1 | — | — | — | — | 218 | |
| EJ CA CA 1 | 3 | 7.0 | 7.0 | 49.0 | 1 | — | — | — | — | 218 | on terrace 15 |
| EJ CA CA 1 | 4 | 14.0 | 10.0 | 140.0 | 1 | — | — | — | — | 218 | on platform 3 |
| EJ EJ LO 11 | 1 | 4.0 | 5.0 | 20.0 | 1 | — | — | — | — | 156 | orig. coded as str |
| EJ EJ LO 11 | 2 | 3.0 | 3.5 | 10.5 | 1 | — | — | — | — | 156 | orig. coded as str |
| EJ EJ LOG 5 | 1 | 4.5 | 2.5 | 11.3 | 1 | — | — | 8 | — | — | orig. coded as str |
| EJ EJ SCN 7 | 1 | 4.0 | 4.0 | 16.0 | ? | — | — | — | — | — | date unknown |
| EJ EJ SMC 6 | 1 | 9.0 | 7.0 | 63.0 | 1 | — | — | 9 | — | — | several interior walls |
| EJ EJ SMC 6 | 2 | 9.0 | 8.5 | 76.5 | 1 | — | — | 9 | — | — | multiroom |
| EJ EJ SMC 6 | 3 | 7.0 | 7.0 | 49.0 | 1 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 4 | 10.0 | 9.0 | 90.0 | 1 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 5 | 8.0 | 8.0 | 64.0 | 1 | — | — | 9 | — | — | |
| EJ EJ SMC 6 | 6 | 5.0 | 6.5 | 32.5 | 1 | — | — | 9 | — | — | possible interior walls |
| EJ EJ SMC 6 | 7 | 9.0 | 5.0 | 45.0 | 1 | — | — | 9 | — | — | multirooms |
| EJ EJ SMC 6 | 8 | 6.5 | 6.5 | 42.3 | 1 | — | — | 9 | — | — | 4 walls partly present |
| EJ EJ SMC 6 | 9 | 7.0 | 6.0 | 42.0 | 0 | — | — | 9 | — | 44 | on terrace 19 |
| EJ LC AE 7 | 2 | 3.0 | 9.0 | 27.0 | 1 | — | — | — | — | 260 | orig. coded as a str |
| EJ LC LC 13 | 1 | 10.0 | 6.5 | 65.0 | 1 | — | 21 | — | — | — | orig. coded as str, antechamber on NE, auxiliary wall on SW |
| EJ LC LC 14 | 2 | 4.0 | 7.0 | 28.0 | 1 | — | — | — | — | 262 | orig. coded as str, walls on E and S |
| EJ SML SML 22 | 1 | 3.0 | 2.0 | 6.0 | 1 | — | — | — | 43 | — | on terrace 4 |
| EJ SML SML 22 | 2 | 4.0 | 4.0 | 16.0 | 1 | — | — | — | 43 | — | on terrace 4 |
| EJ YO YO 11 | 2 | 6.0 | 10.0 | 60.0 | 1 | 62 | — | — | — | — | orig. coded as str, rock walls, abuts str 1 |
| OC SJP SJP 108 | 1 | 10.0 | 10.0 | 100.0 | 1 | — | — | 34 | — | — | orig. coded as str |
| OC SJP SJP 108 | 2 | 15.0 | 8.0 | 120.0 | 1 | — | — | 34 | — | — | orig. coded as str, has interior walls |
| OC SJP SJP 108 | 3 | 4.0 | 6.0 | 24.0 | 1 | — | — | 34 | — | — | orig. coded as str |
| OC SJP SJP 108 | 4 | 4.0 | 6.0 | 24.0 | 1 | — | — | 34 | — | — | orig. coded as str |
| OC SJP SJP 108 | 5 | 5.0 | 4.0 | 20.0 | 1 | — | — | 34 | — | — | on terrace 9 |
| OC SJP SJP 108 | 6 | 4.5 | 3.5 | 15.8 | 1 | — | — | 34 | — | — | on terrace 13 |
| OC SJP SJP 108 | 7 | 5.0 | 3.0 | 15.0 | 1 | — | — | 34 | — | — | on terrace 14 |
| OC SJP SJP 108 | 8 | 6.0 | 4.0 | 24.0 | 1 | — | — | 34 | — | — | on terrace 14 |
| OC SJP SJP 108 | 9 | 5.0 | 5.0 | 25.0 | 1 | — | — | 34 | — | — | on terrace 15 |
| OC SJP SJP 108 | 10 | 2.5 | 1.5 | 3.8 | 1 | — | — | 34 | — | — | on terrace 27 |
| OC SJP SJP 108 | 11 | 4.5 | 4.5 | 20.3 | 1 | — | — | 34 | — | — | on terrace 31 |
| OC SJP SJP 129 | 1 | 2.0 | 2.0 | 4.0 | 1 | — | — | 37 | — | — | on terrace 5 |

## Appendix VII.C. Plaza Details

| Field site no. | P no. | NS | EW | Area | No. of strs. | Component phase nos. LI | II | IIIA | IV | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 1 | A | 45 | 16 | 720 | 1 | — | — | 91 | 24 | 218 | str 7 located on NW edge |
| EJ CA CA 1 | B | 32 | 37 | 1,184 | 4 | — | — | — | — | 218 | enclosed by strs 1–4, including ballcourt, very limited access |
| EJ EJ EJ 1 | ? | — | — | — | — | — | — | — | — | — | can't define plazas because of modern disturbance |
| EJ EJ EJ 30 | A | 15 | 10 | 150 | 0 | — | — | — | — | 173 | artificially leveled, on top of knob with terraces below |
| EJ EJ EV 2 | A | 19 | 19 | 361 | 2 | — | — | — | — | 69 | enclosed on 3 sides by ballcourt and low L-shaped str 7 |
| EJ EJ EV 2 | B | 32 | 38 | 1,216 | 4 | — | — | — | 2 | 69 | enclosed by strs 1–4(ballcourt), limited access |
| EJ EJ LO 11 | A | 20 | 30 | 600 | 0 | — | — | 54 | — | 156 | flattened area on saddle w/small wall on E end |
| EJ EJ MT 10 | A | 26.5 | 10 | 265 | 3 | — | — | — | — | 49 | nice defined plaza, open on S end |
| EJ EJ SCN 1 | A | 21 | 20 | 420 | 2 | — | — | 95 | — | 229 | small, open, with strs on E and W ends |
| EJ EJ SJ 2 | A | 23 | 10 | 230 | 2 | — | — | 31 | — | — | small, open, with strs on E and W sides, on platform 1 |
| EJ EJ SJ 2 | B | 26 | 19 | 494 | 2 | — | — | 31 | — | — | on platform 1, open triangle, strs on SW and NW |
| EJ EJ SJ 2 | C | 14 | 17 | 238 | 2 | — | — | 31 | — | — | on platform 1, open, strs on SW and NE |
| EJ EJ SJ 6 | A | 17 | 18 | 306 | 4 | — | — | 24 | — | — | enclosed by strs 9–12, very limited access |
| EJ EJ SJ 6 | B | 25 | 25 | 625 | 3 | — | — | 24 | — | — | enclosed by strs 15, 11 and 16 on N, E, and S |
| EJ EJ SJ 6 | C | 20 | 22 | 440 | 2 | — | 7 | 24 | 7 | — | very open, strs 14 and 9 on N and W |
| EJ EJ SJ 6 | D | 50 | 35 | 1750 | 3 | — | — | 24 | — | — | on platform 1, strs 4, 3 and 2 on W, S, and E |
| EJ EJ SJ 6 | E | 35 | 40 | 1,400 | 2 | — | — | 24 | — | — | very open, strs 3 and 1 on N and S |
| EJ EJ SMC 7 | A | 18 | 15 | 270 | 2 | 4 | 2 | 11 | — | — | open raised area connecting 2 strs on N and S ends |
| EJ LC AE 7 | A | 9 | 17 | 153 | 1 | — | — | — | — | 260 | sunken plaza enclosed by str 1 and 3 low narrow strs |
| EJ LC LC 8 | A | 30 | 25 | 750 | 4 | — | — | — | 47 | — | enclosed by str1 on NW, BC on SW, and 2 walls that limit access |
| EJ LC LL 2 | A | 26 | 17 | 442 | 3 | — | — | 115 | — | — | strs 1, 2, and 3 on E, N, and W, partially enclosed with limited access |
| EJ LP LG 1 | A | 25 | 30 | 750 | 3 | — | — | 24 | — | — | open, strs 19, 18 and 17 on SW, NW, and NE |
| EJ LP LG 1 | B | 40 | 35 | 1,400 | 4 | — | — | 24 | — | — | strs 15, 12, 13 and 14 on NE and SW, but not completely closed |
| EJ LP LG 1 | C | 35 | 25 | 875 | 3 | — | — | 24 | — | — | open, strs 9, 8 and 4 on N, E and S |
| EJ LP LG 1 | D | 20 | 25 | 500 | 4 | — | — | 24 | — | — | enclosed by strs 7, platform 1 and strs 5–6 on N, E and S, open |
| EJ LP LG 1 | E | 30 | 20 | 600 | 3 | — | — | 24 | — | — | on platform 1, strs 3, 4 and 1 on W and NE, partially limited access |
| EJ SAA SAA 15 | A | 36 | 36 | 1,296 | 4 | 58 | 39 | 130 | — | — | enclosed by strs 2–5, limited access |
| EJ SAA SAA 15 | B | 27 | 22 | 594 | 3 | 58 | 39 | 130 | 51 | — | on platform 1, enclosed by strs 4–6 and wall 1 on E, very limited access |
| EJ SAA SAA 15 | C | 31 | 30 | 930 | 2 | 58 | 39 | 130 | — | — | abuts strs 2 and 5, very open |
| EJ SAZ SAZ 9 | A | 19 | 17 | 323 | 3 | 39 | — | 107 | — | 243 | strs 1–3 on W, N and E |
| EJ SAZ SAZ 9 | B | 11 | 40 | 440 | 2 | 39 | — | 107 | — | 243 | strs 3 and 4 to N and S, open |
| EJ SML SML 22 | A | 27 | 30 | 810 | 2 | — | — | — | 43 | — | strs on N and W, str 3 in center of plaza, very open |
| EJ YO YO 11 | A | 14 | 14 | 196 | 2 | 62 | — | — | — | — | strs 1 and 3 on E and W, house foundation on S, open |
| EJ YO YO 12 | A | 23 | 26 | 598 | 4 | 61 | 44 | 132 | — | 350 | enclosed by strs 1–4, limited access with opening on NW |
| OC SJP SJP 129 | A | 21 | 12 | 252 | 4 | — | — | 37 | — | — | enclosed by strs 2–5, very limited access |

## Appendix VII.D. Wall Details

| Field site no. | W no. | Length | Width | Height | Def | SC | Component phase nos. LI | II | IIIA | IV | V | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EJ CA CA 1 | 1 | 47 | — | 0.5 | no | 0 | — | — | — | 24 | 218 | bolsters loma top |
| EJ CA CA 13 | 1 | 9 | — | — | ? | 0 | — | — | 135 | — | 362 | |
| EJ CA CA 13 | 2 | 186 | — | — | ? | 1 | — | — | 135 | — | — | runs lengths of and connects terraces 14 and 20 |
| EJ EJ BL 3 | 1 | 267 | — | 1.0 | yes | 1 | — | — | — | — | 360 | abuts nat rock outcrop |
| EJ EJ BL 3 | 2 | 191 | — | 0.5 | yes | 1 | — | — | — | — | 360 | |
| EJ EJ BL 3 | 3 | 34 | — | 1.0 | yes | 1 | — | — | — | — | 360 | possible house fndn on W end |
| EJ EJ BL 3 | 4 | 35 | — | 1.8 | yes | 1 | — | — | — | — | 360 | |
| EJ EJ BL 3 | 5 | 320 | — | 0.5 | yes | 1 | — | — | — | — | 360 | |
| EJ EJ BL 3 | 6 | 50 | — | 1.0 | yes | 1 | — | — | — | — | 360 | |
| EJ EJ BL 3 | 7 | 80 | — | 0.5 | yes | 1 | — | — | — | — | 360 | |
| EJ EJ BL 3 | 8 | 36 | — | 0.5 | yes | 1 | — | — | — | — | 360 | |
| EJ EJ BL 3 | 9 | 59 | — | 0.5 | yes | 1 | — | — | — | — | 360 | |
| EJ EJ EA 6 | 1 | 17 | — | — | yes | 1 | — | — | — | — | 320 | on terrace 5 |
| EJ EJ EA 6 | 2 | 22 | — | — | yes | 1 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 3 | 70 | — | — | yes | 1 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 4 | 20 | — | — | yes | 1 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 5 | 11 | — | — | yes | 1 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 6 | 13 | — | — | yes | 1 | — | — | — | — | 320 | is a retaining wall |
| EJ EJ EA 6 | 7 | 9 | — | — | yes | 1 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 8 | 18 | — | — | yes | 1 | — | — | — | — | 320 | off terrace 6 |
| EJ EJ EA 6 | 9 | 21 | — | — | yes | 1 | — | — | — | — | 320 | |
| EJ EJ EA 6 | 10 | 80 | — | — | yes | 1 | — | — | — | — | 320 | abuts platform 2 |
| EJ EJ EV 2 | 1 | 65 | — | — | ? | 0 | — | — | — | 2 | 69 | |
| EJ EJ LO 11 | 1 | 12 | — | — | yes | 1 | — | — | — | — | 156 | |
| EJ EJ LO 11 | 2 | 10 | — | — | yes | 1 | — | — | — | — | 156 | |
| EJ EJ LO 11 | 3 | 10 | — | — | yes | 1 | — | — | — | — | 156 | |
| EJ EJ LO 11 | 4 | 7 | — | — | yes | 0 | — | — | 54 | — | 156 | |
| EJ EJ LOG 5 | 1 | 24 | 1 | — | yes | 1 | — | — | 8 | — | — | |
| EJ EJ LOG 5 | 2 | 24 | 1 | — | yes | 1 | — | — | 8 | — | — | |
| EJ EJ LOG 5 | 3 | 100 | 1 | — | yes | 1 | — | — | 8 | — | — | |
| EJ EJ LOG 5 | 4 | 155 | 1 | — | yes | 1 | — | — | 8 | — | — | |
| EJ EJ LOG 5 | 5 | 190 | 1 | — | yes | 1 | — | — | 8 | — | — | |
| EJ EJ SJ 2 | 1 | 180 | — | — | no | 0 | — | — | 31 | — | 116 | |
| EJ LC LC 8 | A | 37 | 5 | 2.5 | yes | 1 | — | — | — | 47 | — | connects strs 1 and 2 |
| EJ LC LC 8 | B | 150 | 3 | 3.3 | yes | 1 | — | — | — | 47 | — | runs along entire W side of loma, connecting 2 end structures |
| EJ LC LC 11 | 1 | 174 | 1 | — | yes | 1 | — | — | — | — | 264 | forms an enclosed rectangle of 53 × 30 m |
| EJ LC LC 14 | 1 | 170 | — | — | yes | 1 | — | — | — | — | 262 | discontinuous, surrounds strs |
| EJ LC LL 2 | ST3 | 70 | — | — | no | 1 | — | — | 115 | — | — | connects strs 3 and 5b, forming enclosed area S of plaza A |
| EJ LC LL 2 | ST4 | 62 | — | — | no | 1 | — | — | 115 | — | — | the 2 walls form passageway |
| EJ LP LP 6 | 1 | 282 | — | — | yes | 1 | — | — | — | 46 | — | wall encircles loma top, has 90 m diameter |
| EJ SAA SAA 15 | 1 | 17 | — | — | no | 0 | 58 | 39 | 130 | 51 | — | runs along E edge of platform 1 |
| EJ SAA SAA 15 | 2 | 36 | — | 4.0 | no | 0 | 58 | 39 | 130 | 51 | — | runs along S edge of platform 1 |
| EJ SAA SAA 15 | 3 | 53 | — | 1.7 | no | 0 | 58 | 39 | 130 | — | — | extends S of platform 1 |
| EJ SML SML 16 | 1 | 69 | — | — | yes | 0 | — | — | 109 | 45 | 257 | between terraces 36 and 41 |
| EJ SML SML 16 | 2 | 94 | — | — | yes | 0 | — | — | 109 | 45 | 257 | between terraces 36 and 42 |
| EJ SML SML 16 | 3 | 8 | — | — | yes | 0 | — | — | 109 | 45 | 257 | SE of terrace 40 |
| EJ SML SML 16 | 4 | 24 | — | — | yes | 0 | — | — | 109 | 45 | 257 | below terrace 57 |
| EJ SML SML 16 | 5 | 39 | — | — | yes | 0 | — | — | 109 | 45 | 257 | below terrace 41 |
| EJ SML SML 16 | 6 | 125 | — | — | yes | 0 | — | — | 109 | 45 | 257 | NE of platforms |
| EJ YO YO 12 | 1 | 56 | — | — | yes | 0 | 61 | 44 | 132 | — | 350 | below platform 1 |
| EJ YO YO 12 | 2 | 45 | — | — | yes | 0 | 61 | 44 | 132 | — | 350 | below structure 3 |
| EJ YO YO 12 | 3 | 55 | — | — | no | 0 | 61 | 44 | 132 | 52 | 350 | on platform 2, L-shaped, forms partially enclosed area with str 7 |
| OC SJP SJP 110 | 1 | 50 | — | — | yes | 1 | — | — | 36 | — | — | wall may surround 3 sides of terrace |
| OC SJP SJP 129 | 1 | 30 | — | — | yes | 1 | — | — | 37 | — | — | off SW corner of structure 8 |
| OC SJP SJP 129 | 2 | 30 | — | — | yes | 1 | — | — | 37 | — | — | downslope from strs 7 and 8 |
| OC SJP SJP 129 | 3 | 60 | — | — | yes | 1 | — | — | 37 | — | — | downslope from strs 1–4 |
| OC SJP SJP 129 | 4 | 60 | — | — | yes | 1 | — | — | 37 | — | — | downslope from strs 1–4 |

# Appendix VIII. Site Descriptions

This appendix includes all sites within the Ejutla Valley survey area that have at least one pre-Hispanic mound, terrace, or other significant feature. This listing includes all sites that had been reported before we completed our survey (Table 2.2). In a few cases, we located a previously known site that was reported to have mounds, but the mounds had been plowed down and were no longer visible on the surface by the time of our survey. Two of the previously reported sites in the Ejutla district are located in the area beyond the eastern limits of our survey boundary, formed by the divide between the Atoyac River drainage and the Río Grande/Tehuantepec River system (they are not included here). One other site near Yogana, whose location is poorly described, appears to be beyond our western survey boundary.

Sites are listed alphabetically by the assigned field site name (Table 2.2 provides sources and other designations for the previously known sites). For each site, we provide general information on the environmental setting and location relative to modern villages, roads, rivers, and other topographic features. We describe the pre-Hispanic architecture and present the number of mounds and/or terraces, the phases of occupation (with phase component numbers given in parentheses), size (in hectares), and significant artifacts, including obsidian and other chipped or ground stone, shell, and greenstone/jade. Ceramics were found on most sites, so only the absence of ceramics is noted. Mention is made, however, of special or unusual ceramics, such as figurine and urn fragments, kilnwasters, spindle whorls, sherd disks, or unusual concentrations of specific types, such as polychromes.

## EJ-CA-CA-1 (Coatecas)

This large multicomponent terrace site is situated on the southern slopes of El Labrador, at the eastern edge of the Ejutla Valley, approximately 1 km north of Coatecas Altas (Fig. 10.9). Residential terraces are dispersed on a high piedmont ridge and descending slopes that form part of the watershed boundary between the Atoyac River drainage and the Río Grande/Tehuantepec River system. The site extends from the high piedmont down to low piedmont slopes. The top portions of the site are very defendable, with great views of the surrounding area, both east and west of the divide. From this position, passage through the eastern end of the valley could have been monitored.

We mapped 140 terraces at the site, many of which are small. The terraces are distributed in several clusters on the ridges. The 24 structures we recorded include two ballcourts and one four-mound group that encloses a plaza with very limited access as well as several scattered low platforms, small structures, and four small stone house foundations. Most of the architecture (including the ballcourts) is located on the lower slopes of the ridges, yet on the highest ridgeline we mapped several low platforms and small mounds. The grouping on the highest point of the ridge (Cerro El Cacalote) includes a small plaza and associated mound (Fig. 7.15). A possible third plaza is located on the ridgeline above the ballcourts, on a bolstered hill that is partially defined by a low nondefensive wall.

The larger ballcourt (at the southwestern edge of the site) is mostly of stone construction with two large mounds forming the lateral sides of the court (Fig. 10.17). The mound on the eastern end of the ballcourt is much smaller, although just as tall as the other two. The western mound was either much smaller, destroyed by plowing, or both. This ballcourt forms the southern structure of a four-mound group surrounding an enclosed plaza. The ballcourt dominates the four-mound group, while the eastern mound is just slightly larger than the remaining two. Most of the ceramics associated with the ballcourt were Monte Albán V.

The second ballcourt, located approximately 750 m to the southeast, is smaller and less well preserved but with the same orientation as the larger one; the western mound also either is much smaller or has been destroyed by modern farming (Fig. 8.6). This ballcourt is situated on the southern edge of a large platform that has a narrow mound (or wall) situated on the northern edge, opposite the ballcourt. This feature is much more open than the larger ballcourt/four-mound group, but the height of the platform (4 m) would have limited physical access to some degree, even though activities carried out on the platform easily would have been visible. This ballcourt appears to have been constructed in Monte Albán IIIB–IV. Possibly this architectural feature was considered too open by subsequent "elite" who constructed the larger one a short distance away.

The entire site was occupied in Monte Albán V (V-218), when the site covered just over 100 ha and was one of the largest sites in the Ejutla Valley. The site may have been an important early V site, as no polychrome sherds were noted. We mapped many smaller IIIB–IV components (IV-20, 23–28), several of which were associated with the ridgetop structures and the smaller ballcourt. A small IIIA component (IIIA-91) was limited to the small plaza, mound, and several terraces on the top of Cerro El Cacalote. At that time, the site had a very small population and appears to have functioned as a defensive lookout.

The site's residents may have been involved in lithic working, as there is lots of chipped stone on the site, including a chalcedony drill, several chert and chalcedony scrapers, a crystalline green blade, six projectile points, and some ground stone. Obsidian, including 27 blades, was especially prevalent. We noted several quartz outcrops on slopes west of the site. Other significant artifacts include two kilnwasters, two sherd disks and one other worked sherd, three urn fragments, one figurine fragment, and lots of *sahumador* fragments. Several pieces of mica and four pieces of shell were recorded.

Other names for the site include Loma del Chamiso, Llano del Guaje, and Puerto de Yovare (Appendix IX, Fig. 1).

## EJ-CA-CA-13

This multicomponent site is located on top of a ridgeline in the high piedmont that defines the southern edge of the Ejutla Valley, approximately 3.5 km south of Coatecas Altas (Fig. 7.14). The site is very defensibly located, with a clear view of the Ejutla Valley and the northern part of the Miahuatlán Valley. We mapped 28 terraces at the site, and there are two walls that may have been defensive. The entire site is Monte Albán IIIA (IIIA-135), with a small V occupation (V-362) comprising just three terraces and the very top of the ridge.

Most of the terraces are small, but many have well-preserved retaining walls. The terraces have a high density of obsidian (51 blades, nine flakes, and one obsidian point). Chipped stone also was present in higher than usual frequencies (six chert points, two chert drills, three chert bifaces, one chert core, and 18 chert flakes); there were a few fragments of ground stone, including basalt flakes. Other significant artifacts include four pieces of marine shell, nine urn and five figurine fragments, two sherd disks, and one spindle whorl (Fig. 7.36). A possible burial was noted on Terrace 18, along with a greenstone bead and one piece of worked shell. The collective artifact assemblage suggests possible craft specialization, although there was no overwhelming, clear evidence of any one activity. At its largest extent, in IIIA, the site covered 8.4 ha. There is a chert source on site and quartz and mica sources on nearby slopes (Appendix IX, Fig. 2).

## EJ-CA-CA-18

This small (less than 1 ha) single-component Monte Albán IIIA site (IIIA-134) is located on the highest point of a ridgetop in the high piedmont at the southern edge of the Ejutla Valley, approximately 3–3.5 km south of El Arrogante. The site clearly has defensive functions. Two small mounds are situated near the end of the ridge. Artifacts include one urn fragment and six chert flakes (Appendix IX, Fig. 3).

## EJ-EJ-BL-3

This very defendable site is located in the high piedmont at the southern edge of the Ejutla Valley, on the highest point (Cerro Guixe) between Guixe, Agua del Sol, and Barranca Larga (Fig. 10.14). It has a clear view in all directions but especially into the Miahuatlán Valley. The site, which covers 7 ha, is single component Monte Albán V (V-360) and is composed of nine defensive walls, several of which are long (267 m and 320 m). The walls encircle a small knob that forms the center of the site. The site is located on a quartz outcrop. The only nonceramic artifacts are three obsidian blades (Appendix IX, Fig. 4).

## EJ-EJ-CHI-7

This site is in the low piedmont on the north side of San Matías Chilazoa. It extends 200 m to the north, to a small road that forms the Valley of Oaxaca survey boundary, and is an extension of OC-SPA-SPA-6, which was mapped in 1980. The part we mapped covers 3.2 ha and is only Monte Albán V (V-30). The only architecture is one small mound, on the north edge of town near colonial buildings. No artifacts other than ceramics were noted.

## EJ-EJ-EA-6

This small (3.7 ha) defendable site is located on a knob on a high piedmont ridge at the southern edge of the Ejutla Valley, approximately 1.5 km southwest of El Arrogante (Fig. 10.11). The site has an excellent view of the Ejutla Valley to the north, the Coatecas area to the east, and the conjunction of Ejutla and the Miahuatlán Valley to the southwest. The site, which is single-component Monte Albán V (V-320), is composed of two platforms (one of which is large) and one very small structure at the top that are encircled by six terraces and 10 walls. Several of the terraces have good retaining walls. The two longest walls clearly are defensive, but many of the shorter ones may be retaining walls of terraces that are now too destroyed to measure. A few chipped and ground stone fragments were present (including six obsidian blades). No other significant artifacts were recorded (Appendix IX, Fig. 5).

## EJ-EJ-EC-4

This small terrace site is located on a hilltop in the middle piedmont on the southern slopes of El Labrador, 1.5 km east northeast of the town center of Cerro de las Huertas (San José Cerro Grande). The terraces were badly destroyed and were not mapped. We also observed some adobe on the surface. The site was 2 ha in size in Monte Albán V (V-205), with a much smaller part of the site also occupied in IIIB–IV (IV-16). A carved stone (tiger) now positioned in the center of town is thought to have come from this site (Fig. 7.41). Some of the ceramics appear to be early V.

## EJ-EJ-EJ-1 (and EJ-TAN-TAN-1) (The Ejutla Site)

This large multicomponent site is situated under and surrounding the modern district head town, Ejutla de Crespo. The site covers approximately 130 ha, beginning 60 m east of the modern town and extending west for 3.5 km to the eastern edge of Taniche. It is located mostly in the low piedmont, on a series of low bedrock outcrops on the north side of the Ejutla River and just north of the broadest area of alluvium in the Ejutla Valley.

There are at least 12 pre-Hispanic monumental structures at the site, several of which still stand 8–12 m high. From the tops of these mounds it is possible to see most of the Ejutla Valley, in all directions. Most of the mounds are located within modern houselots and have been heavily disturbed by modern use (Figs. 6.5–6.9). There likely were other monumental structures that have been completely destroyed. Thus it is difficult to describe the site plan in any detail. No four-mound groups, ballcourts, or plazas are evident; in general, the most striking character is the great height of at least two of the structures, which are visible from the street rising above the houselot walls. One very large platform held two smaller structures, one at either end, and the center of the platform may have served as a fairly open plaza. The two tallest structures at the site are part of a group of four structures that are situated just north of the large platform. Three of them, including the two tallest structures, may have partially enclosed a plaza (with the north end open); the tallest structure is situated on the east side of this possible plaza. The area between these two groups of structures may have been a long plaza, with the eastern and western ends open. The two churches in town were constructed on top of pre-Hispanic structures. Diguet (1905) reported a cruciform tomb in one of the Ejutla structures;

however, no evidence of it remains today. Bernal also visited the site during his reconnaissance of the Valley of Oaxaca.

The site was occupied from Monte Albán Early I through V. Two very small Early I components (EI-10, 11) are not securely associated with any architecture. Late I ceramics were noted in four areas (LI-34–37). Although Late I ceramics are found around most of the structures (LI-37, the largest Late I component at the site), observations of mound fill in several of the structures indicate a Monte Albán II construction date. The Monte Albán II component (II-16) associated with the structures is the largest of the four II components (II-13–16). Many levels of plaster floors (some with red paint) can be seen, indicating a series of rebuilding episodes. Most of the structures also are associated with IIIA-74, the largest of the 11 Monte Albán IIIA components (IIIA-65–75) at the site. Monte Albán IIIB–IV ceramics were found only in three parts of the site (IV-13–15), none associated with the structures. Monte Albán V ceramics were found in nine areas (V-185–193). All the structures are included in V-189, the largest V component, yet whether there was any new construction or just reuse of earlier mounds is unclear. Several carved stones are visible in the outer walls of several houses in town. The largest one is part of a body with crossed arms (Fig. 7.40), similar to carved stones known from the Tututepec area near the Pacific Coast.

Artifactually, this was one of the richest sites in the survey area. We recorded almost 200 pieces of obsidian, including one projectile point, one drill, and 142 blades. Ground stone and other chipped stone are much less abundant but still include several manos and hammerstones; one celt; chert, quartz, and basalt flakes; and two quartz scrapers. Other artifacts include three clay beads, one spindle whorl (Fig. 7.36), one bark beater, two kilnwasters, seven urn fragments, and 11 figurine fragments. Scattered pieces of shell were found throughout, but most of the shell was observed in several fields along the eastern edge of the site (and modern town), where there were hundreds of pieces of shell, including many pieces with evidence of working (Fig. 7.33). Many worn obsidian blades were found in association with the shell (Fig. 7.34). In the same part of the site, we found the spindle whorl and kilnwasters, indicating that shell working, weaving, and ceramic production may have been practiced in that part of the site. Late I, II, IIIA, IIIB–IV, and V ceramics were found in association with the shell, so it was not possible to date the shell working from the surface remains (Appendix IX, Fig. 6).

## EJ-EJ-EJ-2

This small (3.4 ha) multicomponent site with one mound is situated on a middle piedmont ridge on the southwestern slopes of El Labrador, approximately 2.5 km northeast of Ejutla de Crespo. Both Monte Albán IIIA and V ceramics are present, with the IIIA component (IIIA-53) only half the size of the V occupation (V-172). There are few nonceramic artifacts, only one obsidian blade, one mano, and one quartz flake.

## EJ-EJ-EJ-3

This very small (less than 1 ha) multicomponent site with one low mound is located on a middle piedmont ridge on the lower slopes of El Labrador, approximately 2 km northeast of Ejutla de Crespo. The hilltop has a modern double shrine for the sun and the moon. The mound had been heavily looted in the past. Three ceramic scatters originally were recorded as three separate sites. The largest piece, with the mound, is both Monte Albán IIIA (IIIA-78) and V (V-198). The two smaller pieces (originally EJ-EJ-EJ-4 and EJ-EJ-EJ-5) are V only. Artifacts include three obsidian blades, one polished greenstone pendant, and many Monte Albán V *sahumador* fragments. On a later visit to the site after the survey we collected a broken greenstone bead. There is a red and yellow ochre source just downslope from the mound. The site is known locally at El Mogote.

## EJ-EJ-EJ-27

This small (4.9 ha) single-component Monte Albán V site (V-174) with 54 terraces is situated on the top of a high piedmont ridge on the southwestern slopes of El Labrador, approximately 2.5 km northeast of Cerro de las Huertas. The site is clearly is defendable. Most of the terraces are small. A few pieces of chipped and ground stone were present (including 12 obsidian blades). The only other significant artifact is an urn fragment. The ceramics look like early V (Appendix IX, Fig. 7).

## EJ-EJ-EJ-30

This small (3.2 ha) single-component Monte Albán V site (V-173) with 48 terraces is situated on a high piedmont ridgetop on the southwestern slopes of El Labrador, approximately 2 km north northeast of Cerro de las Huertas. There is an artificially flattened plaza on top of the ridge, with the terraces on the slopes below (Fig. 10.10). Most of the terraces are small. The site clearly was defendable, with possible military and/or boundary functions. We found three obsidian blades but very little other chipped or ground stone. The only other significant artifact is a spindle whorl (Fig. 7.36). The ceramics look like early V (Appendix IX, Fig. 8).

## EJ-EJ-EJ-40

This very small site with one low mound is located on a ridgetop in the high piedmont on the southern slopes of El Labrador, approximately 4.5 km north of Coatecas Altas. There were no visible ceramics, so the site could not be dated; there were no other artifacts.

## EJ-EJ-EJ-42

This large multicomponent site is located on the high alluvium on the north, west, and south sides of Coatecas Bajas (Coatequitas) between the two upper branches of the Ejutla River (the Yegore and Yegozana Rivers). It stretches from the north bank of the Yegozana River 1.25 km north to the Ejutla-Coatecas Altas road. The most prominent feature is a

large platform mound located 350 m west of Coatecas Bajas on the south side of a bend in the road to Ejutla and 100 m north of an arroyo that drains in to the Yegozana River.

The platform, the largest mound we recorded on the survey, is triangular shaped. It was built on top of low rise, making exact measurements difficult, but the base measures 185 by 40 m at its widest point. The remains of what appear to be three plowed-down structures are visible on the top of the platform. Although many of the significant artifacts collected from the site were found on or near the platform mound, most of the obsidian and several polychrome sherds were distributed across the expanse of the site. The obsidian includes 16 blades, one projectile point, and one scraper. There are four manos and a few other pieces of ground stone. Other chipped stone consists of only a few basalt flakes. Other significant artifacts include one figurine fragment, one kilnwaster, two sherd disks, one spindle whorl, seven pieces of polychrome, one piece of mica, and 13 pieces of shell (one was in the shape of a disk, but most was unworked).

The site was by far the largest (74.6 ha) in Monte Albán V (V-304). Ceramics from earlier phases also were recorded on and around the platform mound—LI-53, II-35, IIIA-124, and IV-48. A very small Early I component (EI-19) was located 125 m northeast of the platform. On the north edge of the site, 400 m north of the platform, are small components of Monte Albán IIIA (IIIA-123) and II (II-36).

The importance of this site in any one phase is difficult to determine. From the surface remains we cannot tell when the platform was built. The calculated mound volume is over 15,000 $m^3$, which would put it near the top of the mound hierarchy in most phases, yet this figure includes some natural slope. Prior to Monte Albán V, the population of the site was only around 100 people at most. The site is much bigger in V than in any prior phase (population over 700), and other scatters of Monte Albán V pottery in this area of high alluvium may have been part of this same large community. The presence of so much polychrome indicates that it was important in late Monte Albán V (Fig. 10.19) in spite of the fact that we could not be sure of the number of mounds and mound volume associated with the V occupation.

## EJ-EJ-EV-2 (and EJ-EJ-EV-13) (El Vergel)

This multicomponent site is located on the top and upper slopes of a small middle piedmont hill (Cerro Yaniche; Fig. 10.12) surrounded by lower piedmont and the alluvium between two small streams that flow into the Prieto River (the principal northern tributary of the Ejutla River), 1.25 km north northeast of El Vergel. A large architectural group of 13 structures, including two ballcourts, is located on the very top of the hill. As with EJ-CA-CA-1, one of the ballcourts is only Monte Albán V (V-69), while the other one is both V and IIIB–IV (IV-2). Both ballcourts are oriented just east of north. The earlier ballcourt is formed by two 3–4-m lateral structures, with a low mound on the north end that is longer than the two lateral mounds though only half as tall. The structure at the southern end apparently was much smaller. On the west side of this ballcourt is a large plaza that is enclosed by three additional low, narrow mounds. Two of them appear to be too narrow to have supported buildings of any size and may have served only to create an enclosed space; however, entry would have been possible through at least the southwest corner. The second ballcourt is located just south of the first one. The two lateral structures also are approximately 3–4 m high, with the northern end demarcated by a broad low mound. The southern mound either was much smaller or did not exist. Immediately west of this ballcourt is an L-shaped structure that forms another plaza, which is enclosed on three sides.

All but one of the 20 terraces at the site are found in two separate clusters of terraces that originally were recorded as separate sites (EJ-EJ-EV-2 and EJ-EJ-EV-13). We combined the two clusters after finding continuous sherd scatter between them. Both sets, one with four terraces and the other with 15, are associated with Monte Albán V architecture. Several of the terraces are quite large. About half the terraces are also IIIB–IV (two for IV-1 and seven for IV-3). One low curving wall just south of the main architectural center of the site appears too small and isolated to function for defense.

At its largest extent in Monte Albán V, the site covered 25 ha. Of the three IV components, only one, which is associated with the architecture on the top of the knob, was of any size. The three earlier components are very small, with Late I ceramics (LI-5) found only on one small terrace and II and IIIA ceramics (II-3, IIIA-14) found only on one structure.

Artifacts on the surface suggest that celt manufacture and ceramic production occurred on the site. The ground is littered with ground stone debris, including schist hammerstones, chunks, and flakes; 10 other hammerstones; a quartz projectile point; five obsidian blades and one flake; and one piece of drilled quartz. We collected three Monte Albán V kilnwasters and 1 local variant of Monte Albán V red-on-cream. Other significant artifacts include one stone bead, one spindle whorl, several *sahumador* fragments, and 21 pieces of unworked marine shell (Appendix IX, Fig. 9).

## EJ-EJ-EV-15

This site is located between two streams in the alluvium under the modern town of El Vergel. It extends north of town for approximately 50–75 m, to the base of Cerro Yaniche. We did not record any architecture, but the site was quite large in Monte Albán V (V-83), extending over an area of 40 ha (estimated population of 700). There are smaller components of Late I (LI-15, 16) and IIIA (IIIA-16–18) at the site. The only significant artifacts are two obsidian blades and many chips/flakes.

## EJ-EJ-LO-4

This dispersed Monte Albán IIIA site (IIIA-44) is located 3.5 km east northeast of Los Ocotes, on two high piedmont ridges on the northwestern slope of El Labrador. The site is on the highest point where the two ridges meet. There was lots of building stones but no clear structures or mounds. The site had been looted in the past. In one looter's pit, the top of a subterranean tomb was visible, and a flat stone that may have covered the tomb was nearby. Three walls of the tomb are visible; the interior of the tomb is 1.5 m wide. The only significant artifact was one gray obsidian blade. The site is known locally as Los Ocotillos.

## EJ-EJ-LO-5

This small (2.9 ha) single-component Late I site (LI-28) is located on a middle piedmont ridge 3 km northeast of Los Ocotes. We recorded three mounds, two of which are very small. The two small structures are situated at right angles to each other, while the third, larger structure is located approximately 100 m to the northwest. The only nonceramic artifacts are seven obsidian blades, one obsidian point, and one piece of ground stone (Appendix IX, Fig. 10).

## EJ-EJ-LO-7

This is a small site (5.2 ha) on both sides of a small stream in the low piedmont, 2.75 km northeast of Los Ocotes. There are three small terraces on the low ridge north of the stream. Although the site is multicomponent (two small IIIA components are present—IIIA-41, 42), the terraces are Monte Albán V only (V-151). The only artifacts observed, other than ceramics, are three obsidian blades and some chert (Appendix IX, Fig. 11).

## EJ-EJ-LO-8

This is small site (4.6 ha) on a ridge in the middle piedmont, 2 km northeast of Los Ocotes. The site consists of four dispersed terraces. The site is multicomponent; there is a small Monte Albán V component (V-152), but the terraces are only IIIA (III-43). The only artifact recorded, other than ceramics, is one obsidian blade (Appendix IX, Fig. 12).

## EJ-EJ-LO-11

This dispersed (10 ha) multicomponent site is situated 1.6 km southeast of Los Ocotes, on the top and southern slope of a ridge in the high piedmont on the western slopes of El Labrador. Today the hilltop holds a shrine to which the local people make pilgrimages. Architecture at the site is dispersed along the ridge, including one terrace, one small mound, one plaza, two small house foundations, and four dispersed walls. All the walls are short. One wall is located at the very top of the ridge. Downslope to the west are the two small house foundations and the second wall. Downslope to the south is the terrace and the third wall. Farther down this same slope is a small saddle where there is a plaza and the structure. The fourth wall is located along the northeastern end of the plaza. Much of the site is only Monte Albán V (V-156); however, the structure and plaza on the saddle are also Monte Albán IIIA (IIIA-54). There is also one other very small IIIA component (IIIA-46). The only nonceramic artifacts are two obsidian blades and one piece of greenstone (Appendix IX, Fig. 13).

## EJ-EJ-LOG-1

This site is situated under and around the modern village of San Juan Logolava, especially on the east and north sides of the town, in the alluvium south of the Barranca del Higo (which flows west to the Atoyac River). The site is on very good agricultural land. The site is single-component Monte Albán V (V-40) and covers approximately 14.8 ha. The town's church was constructed on top of a colonial building that incorporates carved stones. We also found colonial pottery; this may have been an important colonial town. The colonial buildings appear to have been constructed on top of pre-Hispanic remains that were totally destroyed. Other than ceramics, we found one mano, seven obsidian blades (mostly green), one scraper, and four flakes.

## EJ-EJ-LOG-2

This is a very small (less than 1 ha) single-component Late I site (LI-3) in the low piedmont, 400 m west of San Juan Logolava. There is one small mound less than 50 m south of the Barranca del Higo (which flows west to the Atoyac River). The only nonceramic artifacts are several chert flakes and one mano fragment.

## EJ-EJ-LOG-5

This defendable site is located on top of a steep-sided ridgetop (called Loma del Cuatle) in the high piedmont slopes that divide the Ejutla Valley from the Atoyac River to the west, approximately 1 km southeast of San Juan Logolava. The single-component Monte Albán IIIA site (IIIA-8) covers 7.3 ha. The top of the ridge is circled by five defensive walls; the two longest walls are 155 m and 190 m. These walls guard the less steep southeastern approaches to the top. The northern and western slopes of the hill are much steeper. There is also one small house foundation on the very top of the hill. The site appears to have been a military garrison. There were only a few ceramics and a few pieces of quartz (Appendix IX, Fig. 14).

## EJ-EJ-MT-10

This small (1.9 ha) single-component Monte Albán V site (V-49) is located on the lower slope of a low piedmont hill, 100 m north of Monte del Toro. The site comprises a formal three-mound group surrounding a small, well-defined plaza. There are few nonceramic artifacts, only one obsidian flake and several quartz flakes. The site also may have been occupied in the colonial period (Appendix IX, Fig. 15).

## EJ-EJ-MT-11

This small (6.5 ha) multicomponent site is located on top of a middle piedmont ridge, 400 m northwest of Monte del Toro. There are two small mounds on the top of the hill that are only Monte Albán V (V-50); the structures are more than 50 m apart and do not form a complex. A much smaller IIIA occupation (IIIA-10) is located away from the mounds. There are modern agricultural terraces on the slopes but no clear evidence of ancient terraces, although it is possible that ancient ones have been obliterated by modern agricultural use. There is quite a bit of worked chert on the surface, one mano fragment, and a few quartz flakes (Appendix IX, Fig. 16).

## EJ-EJ-SCN-1

This small (1.7 ha) multicomponent site is located on a middle piedmont ridge on the west side of the Atoyac River, 1 km west of the highway to Sola de Vega and 1.25 km southwest of Santa Cruz Nexila. There are two small structures enclosing a small plaza that was open to the north and south. The site is slightly larger in Monte Albán V (V-229) than in IIIA (IIIA-95); ceramics from both phases are found on the structures. The only nonceramic artifacts are one obsidian blade and one hammerstone (Appendix IX, Fig. 17).

## EJ-EJ-SCN-3

This small (1.3 ha) single-component Monte Albán V site (V-227) is located on a high piedmont ridge west of the Atoyac River, 1.75 km west of Santa Cruz Nexila. There is only one small, low mound built on a natural stone outcrop. Only a trace of ceramics was noted.

## EJ-EJ-SCN-5

This small (1 ha) single-component Monte Albán V site (V-226) is located on a high piedmont ridge west of the Atoyac River, 2 km west of Santa Cruz Nexila. The site consists of five small, very closely spaced terraces. The only artifacts recorded, other than ceramics, are some chert flakes (Appendix IX, Fig. 18).

## EJ-EJ-SCN-10

This small (less than 1 ha) site is located on a low piedmont spur above the east bank of the Atoyac River, approximately 1 km east of Santa Cruz Nexila. The site was largest in Monte Albán Late I (LI-43) and was reoccupied in V (V-250). We found a greenstone bead eroding out of a burial. The only other nonceramic artifacts are a few chert flakes and cores.

## EJ-EJ-SCN-11

This very small (less than 1 ha) single-component Monte Albán II site (II-19) is located on top of a middle piedmont ridge in the hilly terrain that divides the Ejutla Valley from the Atoyac River to the west. The site is approximately 2.5 km east of Santa Cruz Nexila and 2.5 km west of La Pe. There is one very small mound; a wall of six stones is visible along the eastern edge of the structure. Several quartz nodules were noted on the site; there are some quartz outcrops on connecting ridges. Some mica also was observed on the slope just north of the site.

## EJ-EJ-SCN-12

This very small (less than 1 ha) single-component Monte Albán V site (V-251) is located on a middle piedmont ridge in the hilly terrain that divides the Ejutla Valley from the Atoyac River to the west. The site is approximately 2.75 km east of Santa Cruz Nexila and 2.5 km northwest of La Pe. There is one small, low structure that is built on a natural rock outcrop, and there is a looter's pit in the top of the mound. Only a trace of ceramics was observed. The site is 125 m north of a mica mine.

## EJ-EJ-SCN-17

This very small site (less than .5 ha) is located on a middle piedmont ridge in the hilly terrain that divides the Ejutla Valley from the Atoyac River, approximately 2.75 km east of Santa Cruz Nexila and 2.25 km northwest of La Pe. The site is just south of a mica mine, and the area is covered with pieces of mica. The site was occupied in Monte Albán II (II-20) and V (V-252).

## EJ-EJ-SCN-18

This multicomponent site is situated on a shallow piedmont slope on the east side of the Atoyac River, approximately 2 km north of Santa Cruz Nexila. There was no preserved architecture, but we did observe pieces of adobe and burned daub on the surface. Although not large, this site was occupied almost throughout the entire sequence (EF-2, R-4, EI-13, LI-41, II-18, IV-42, V-246). It was largest in Late I (2.3 ha). In addition to a fair amount of ceramics on the surface, we observed one spindle whorl, lots of chert flakes, and seven obsidian blades and one point.

## EJ-EJ-SJ-1

This small single-component site (less than 1 ha) is situated on a low piedmont spur between the Coapa tributary of the Ejutla River (on the east) and a small stream to the west, 1.25 km northeast of San Joaquín. The site is 150 m north of EJ-EJ-SJ-2. The site has one small but fairly tall mound. A plaster floor is visible in the mound, and there appears to have been a small structure on top of the mound. This is the only site in the survey region where we thought the ceramics looked like IIIB, but the ceramic assemblage at the site is small and with have called it more broadly IIIB–IV (IV-29). No other significant artifacts were observed.

## EJ-EJ-SJ-2

This multicomponent site is located on a low piedmont rise, on the west side of a small stream that flows to the Coapa tributary of the Ejutla River, 1 km north of San Joaquín. At the top of the hill is a large platform with 3 mounds (Fig. 7.21). Three small plazas on top of the platform are partially enclosed by the structures—the structure on the east is the largest. Six other smaller structures are spread over the site in a random pattern. Six small terraces are associated with the structures on the eastern slope of the hill. There is a low, poorly preserved

stone wall in the area with the terraces; however, the site does not appear to be defensive. The entire site is Monte Albán IIIA (IIIA-31). All of the terraces and two of the structures on the platform are also Monte Albán V (V-116). Only two structures, one on the platform and one nearby, are IIIB–IV (IV-9).

The site was largest in Monte Albán IIIA, when it covered 17 ha. The presence of three spindle whorls (Fig. 7.36), all attributable to IIIA only, suggests that weaving was an important economic activity. A high frequency of poorly made G-23s indicates possible ceramic production. Three manos were recorded but no chipped stone other than obsidian. The obsidian includes one point, one noseplug, one scraper, and 27 blades. Other significant artifacts include two pieces of marine shell, one figurine and eight urn fragments, and two sherd disks (Appendix IX, Fig. 19).

## EJ-EJ-SJ-6 (and EJ-LP-LG-1) (San Joaquín)

This very large (approximately 580 ha) multicomponent site is situated on a series of low piedmont rises between the two major, northern tributaries of the Ejutla River (the Prieto and the Coapa tributaries) in the north-central part of the Ejutla Valley. It includes low-lying land on both sides of the Prieto tributary. The site is west of the highway to Ejutla de Crespo, between El Vergel, San Joaquín, and La Guadalupe. The site has 44 structures; 40 structures and 10 plazas are located in three clusters on the tops of three separate low hills. Each cluster has an architectural complex that includes plazas with varying degrees of access. Other plazas may have been plowed so much that they were hard to define. The other four structures are dispersed.

Half the structures and plazas (20 and five, respectively) are located on top of the largest, western hill (Figs. 7.17 and 7.18). The structures on this rise are dispersed in several groups along the top of the ridge, each with at least one plaza. All the plazas are surrounded by three or four mounds and may have had limited access. The largest group includes a platform with four structures on top of it and an adjacent small ballcourt.

The other two clusters of mounds are located on top of smaller, northern and southern hilltops, and both have more compact architecture (Figs. 3.5, 7.19, and 7.20). The northern one has 12 structures and three plazas. Most of the structures there are arranged linearly around the plazas; the center one is the most closed at the site. This part of the site has suffered the most from plowing, so it is possible that some mounds have been completely destroyed. The southern cluster has eight structures and two plazas. Five of the structures there form a complex with the two plazas; the other three structures are situated off to one side. The three structures that enclose one plaza appear to have been built on top of a small natural rise (that may have been enhanced somewhat), giving the appearance of limited access to the plaza. The other plaza is quite open.

This site was visited by Bernal, who reported a tomb on one of the hilltops. There is another tomb in the hacienda in La Guadalupe, but it was no longer visible when we surveyed there. The hilltops of the site are known by various names, including Los Cerritos and Los Mogotes.

The entire site and all the structures are Monte Albán IIIA (IIIA-24), and most of the structures are single-component IIIA. The largest (western) cluster is only IIIA; however, a two-mound group slightly downslope is also IIIB–IV (IV-8) and V (V-112). Except for the IIIB–IV occupation (IV-7) of one mound, the southern cluster also is only IIIA. We found Monte Albán II ceramics (II-7) on one plaza in the northern cluster but not on any of the structures. More than half the structures in that cluster continued to be occupied in IIIB–IV.

The architectural clusters on the three hilltops are connected by a low-density sherd scatter, although the heaviest concentrations are found around the structures. Obsidian is especially abundant, including 126 blades, one core, and one blade modified into a disk. Ground stone also is abundant, with 11 manos, 11 metate fragments, one celt, and several hammerstones. Other chipped stone is less abundant but include four chert projectile points and a high quantity of worked quartz. Other artifacts include three pieces of shell, two spindle whorls (Fig. 7.36), four sherd disks, two fired clay concretions, two figurine fragments, and six urn fragments. There is considerable evidence for economic specialization. Obsidian working was present at the site, with more blades in the northern cluster and more flakes (gray flakes and core) in the southern and western clusters. Other possible activities include quartz working, spinning, and ceramic production (Appendix IX, Fig. 20).

## EJ-EJ-SJ-10

This multicomponent site (4.8 ha) is situated on a low piedmont rise, 50 m northwest of the Coapa tributary of the Ejutla River and 150 m south of San Joaquín. There are four structures and one platform at the site. The platform is small and abuts the southern edge of the largest structure. The three other structures are arranged linearly 25 m south of the platform. No clear plaza was observed, but the site was planted in maize at the time of survey, which limited our visibility. The site is largest in Late I (LI-30), but ceramics from Early I (EI-8) and II (II-12) also were found on the structures and the area immediately surrounding them. Nonceramic artifacts include an obsidian blade and a few other small fragments, one piece of ground stone, and one quartz crystal (Appendix IX, Fig. 21).

## EJ-EJ-SMC-6

This multicomponent terrace site (6.7 ha) is situated on a high knob (Cerro de Llavero) at the southern edge of the steep piedmont escarpment in northern Ejutla, approximately 3 km west of Monte del Toro (Fig. 7.12). The terrain slopes much more gradually to the north. The site has a great view of terrain to the south. The site is also called Mogote de las Azucenas. Most of the 19 terraces at the site are small and are situated around and on the knob itself. Seven small structures and nine house foundations are scattered along a lower ridgeline to the north. The entire site is Monte Albán IIIA (IIIA-9) and clearly has defensive functions. The small areas of Monte Albán II (II-1) and V (V-44) are found only on isolated terraces and structures near the top of the ridge. Very few artifacts were noted other than ceramics (including two urn fragments), except for a metate fragment, two obsidian blades, and one piece of worked bone, possibly a tubular bead (Appendix IX, Fig. 22).

## EJ-EJ-SMC-7 (Chichihualtepec)

This small (3.5 ha) site is situated on a low piedmont rise at the edge of the alluvium, 100 m west of a small northern tributary of the Ejutla River and approximately 1.25 km northwest of Santa Marta Chichihualtepec. There are three structures at the site; the tallest ones form a two-mound group and are connected by a raised area that is probably a small plaza (Fig. 4.8). The third structure is set off a bit to the west. The site has Early Formative ceramics (EF-1; Fig. 4.3), possibly even Tierras Largas, but because the site has such a long occupation, it is not known if the structures were present that early. All three structures are associated with ceramics from the Early/Middle Formative, Early I (EI-2), Late I (LI-4), and II (II-2). Rosario and Monte Albán V ceramics are present only on the isolated structure (R-1, V-59), while IIIA ceramics also are present on the two-mound group (IIIA-11). The site was largest in Late I and II and smallest in Rosario and V. The site is rich in terms of artifacts, with lots of obsidian, including eight blades; one mano; one celt; chert, chalcedony, and jasper flakes; one chert core; one piece of worked shell; one piece of mica; two figurine fragments; and lots of fancy Valley of Oaxaca Monte Albán II pottery (A-9s and cremas) (Appendix IX, Fig. 23).

## EJ-EJ-SO-4

This is a small (1 ha) multicomponent site on a flat hilltop in the low piedmont, 400 m south of the south branch (Yegozana) of the Ejutla River, 1 km east of the Zoritana barrio of Ejutla de Crespo. There is one small, low mound. Monte Albán Early I and Late I ceramics (EI-18, LI-54) were noted on or near the structure. The only significant artifact is a figurine fragment with a complete face.

## EJ-LC-AB-1 (and EJ-LC-AE-8)

This multicomponent site consists of three separate components (all within 100 m of each other) in the low/middle piedmont, on both sides of the Prieto tributary of the Ejutla River, 200 m northwest of Agua Blanca. One component (just under 1 ha), on the rise west of the tributary, has Early I and Late I ceramics (EI-14, LI-45), no structures, and one obsidian blade (originally given field number of EJ-LC-AE-8). The other two components (5.6 ha) are Monte Albán IIIA (IIIA-112) and include three small mounds on top of a low rise on the east side of the channel. The structures and a small area surrounding them also are Monte Albán V (V-267). All three structures consist of building stone. One structure was heavily disturbed by plowing. Two structure are situated side by side, while the third, smaller one is more randomly situated about 35 m away. There are more artifacts associated with this part of the site, including five obsidian blades, chert and basalt flakes, three chert cores, one basalt hammerstone, and three urn fragments (Appendix IX, Fig. 24).

## EJ-LC-AE-7

This small (4.6 ha) single-component Monte Albán V site (V-260) is situated on a high mountain ridge at the western edge of the survey boundary, 3 km northwest of La Compañía. The site is definitely defendable. At the very top of the ridge is a large mound on the north side of a sunken patio/plaza that is enclosed on the other three sides by low narrow structures/walls, one of which has a large looter's trench. There are five small terraces and one small house foundation with several clearly visible stone walls. Two of the terraces have good retaining walls, one has well-defined rock-faced walls, and plaster floors are visible in the other two. Farther down the slope is a low platform with a possible house foundation. The only nonceramic artifact noted is one mano fragment (Appendix IX, Fig. 25).

## EJ-LC-LC 8

This small (1.2 ha) single-component period IIIB–IV site (IV-47) is located on a very narrow, steep-sided ridge in the low piedmont near the base of a steep mountain at the western edge of the Ejutla Valley, 150 m northeast of the Atoyac River and 1.5 km west-southwest of La Compañía. The site is defensibly located, close to where the Atoyac River enters the Ejutla Valley. There are two walls that define the eastern and western limits of the site. The architectural features at the site are very tightly clustered along the ridgetop. One large structure dominates the site and forms the southern edge of a small ballcourt. Just north of the ballcourt is a plaza area that is defined by a mound on the north and by the two walls on the east and west. Access to the plaza and the ballcourt would have been very limited. South of the largest mound is a low platform with a visible plaster floor. The density of obsidian at the site is very high, including 21 blades. Other artifacts include one metate fragment, one celt, one chalcedony projectile point, one pink shell bead (*Chama* or *Spondylus*), two figurine fragments, several chert flakes, mica, and imitation Fine Orange. The site is known locally as El Gallo and has been heavily looted in the past (Appendix IX, Fig. 26).

## EJ-LC-LC-11

This very small (less than 1 ha) single-component Monte Albán V site (V-264) is situated at the top of a high piedmont ridge that descends steeply to the Ejutla River on western edge of the Ejutla Valley, 2 km west of La Compañía. The site consists only of a low rock wall that encloses an area of 1590 $m^2$; it appears to be for defense. No ceramics were observed because of heavy vegetation. Because all nearby sites date only to V, our best estimate is Monte Albán V (Appendix IX, Fig. 27).

## EJ-LC-LC-13

This small (1.4 ha) multicomponent site is located on a middle piedmont ridge 1 km west of La Compañía. There are two isolated structures, one of which is only a low house foundation. The larger structure is both Monte Albán II (II-21) and V (V-265), while the house foundation, located farther downslope, is only II. There is a visible hearth inside the house foundation. No artifacts other than a trace of ceramics were noted (Appendix IX, Fig. 28).

## EJ-LC-LC-14

This very small (less than 1 ha) single-component Monte Albán V site (V-262) located on top of a high piedmont ridge, 2.25 km northwest of La Compañía. The site is clearly defendable. One small, low mound and one house foundation were mapped, both of which are about three-quarters enclosed by a low stone wall. The only nonceramic artifacts are several chert flakes and 1 core (Appendix IX, Fig. 29).

## EJ-LC-LL-1

This small (3.5 ha) multicomponent is situated on a low rise in the low piedmont, 100 m west of the Atoyac River and 500 m southwest of La Labor. There are two mounds on the site and a possible burial. The site was largest in Late I (LI-63) and II (II-26), when the two mounds were occupied. In a small area removed from the structures, ceramics from Early I (EI-16), IIIA (IIIA-114), and V (V-288) also were observed. Chipped stone at the site includes one obsidian blade and one white chert core and many flakes (especially near the structures). One piece of shell also was noted (Appendix IX, Fig. 30).

## EJ-LC-LL-2

This large (14.5 ha) multicomponent site is located on two low piedmont rises on both sides of the Atoyac River, 200 m west of La Chopa. The site has 12 mounds, all but one of which are taller than 1 m. There are 11 structures arranged in a fairly tight cluster on the west side of the river; that part is only Monte Albán IIIA (IIIA-115) and was heavily looted. Five of the structures and a wall that connects Structures 3 and 5B form an enclosed area with very limited access. At the north end of the enclosed area is a plaza surrounded by a three-mound group, with the tallest structure at the site located on the eastern side of the plaza. Just to the west of this mound group is another structure with a wall that parallels the wall in the mound group. Together these two features form a narrow passageway; however, the purpose of this passage way is unclear, as it does not lead to any additional structures. The other five structures are distributed in a more random pattern just to the west. There are possible tombs in two of the structures. The other structure is by itself, located on the east side of the river, and is IIIA and V (V-291). On top of that mound we found a large stone that appears to come from a tomb; next to it we found bits of plaster. Several walls on site appear to control access. Chipped stone is abundant, including 15 obsidian blades and chert flakes. Other artifacts include one celt and one urn fragment. A farmer told us that a carved stone with numbers was found at the site. The site is known locally as El Encanto or El Cerro Encantado (Appendix IX, Fig. 31).

## EJ-LC-RE-1

This very small (less than 1 ha) single-component IIIB–IV site (IV-46) is located in the low piedmont, 1.25 km north of Río Ejutla. It consists of one small, low mound. The only nonceramic artifact is one obsidian blade.

## EJ-LP-LP-2

This small (4 ha) multicomponent site is located in the low piedmont on the east side of La Pe, less than 50 m east of the arroyo and on the north side of the road to Ejutla. The site has four low structures, one of which was too plowed down to get accurate measurements. The structures form two lines that are perpendicular to each other. There may have been a small plaza between the two sets of structures, but it is not clearly defined. The structures are single-component Late I (LI-9), although smaller components of Early I (EI-3) and V (V-90) are nearby. The site is typical of Late I sites with architecture. Artifacts include two obsidian blades and several flakes, one mano, several chert pieces and tools, one piece of shell, one sherd disk, two figurine fragments, one urn fragment, and one kilnwaster (Appendix IX, Fig. 32).

## EJ-LP-LP-6

This small (less than 1 ha) single-component IIIB–IV site (IV-4) is located in the middle piedmont on the western side of the Ejutla Valley the divides Ejutla from the Atoyac River, 2 km southwest of La Pe. The site consists of a low wall of rubble that circles the hilltop; the site clearly was defendable. There are no nonceramic artifacts.

## EJ-SAA-SAA-10

This multicomponent site is located in the low piedmont, on the west side of a large bend in the Atoyac River, 250 m north of La Soledad barrio of San Agustín Amatengo. There is one small mound with at least five plaster floors visible in a looter's pit; there is a possible tomb at the base of the structure. The mound had been partially bulldozed by the time of the survey. The site was occupied in Late I (LI-49), II (II-31), and V (V-295). The entire site (8.9 ha) is Monte Albán II; ceramics from the other two phases are found only on or immediately around the structure. A few pieces of chipped stone, including one obsidian blade and a few chert cores, are the only nonceramic artifacts. There are lots of cremas and 1 urn fragment.

## EJ-SAA-SAA-15

This large (14.5 ha) multicomponent site is situated on a low piedmont rise on the east side of a large bend in the Atoyac River, south of its confluence with the Ejutla River, 500 m southwest of San Agustín Amatengo (and south of La Soledad barrio). This is a great location. The site includes 10 structures (two of which are platforms), three plazas, and three walls. All but one of the structures and other architectural features are part of a very closed set of mounds (Figs. 4.7 and 5.17). The two platforms each hold two mounds. The two platforms form the southern and western sides of a closed plaza (Plaza A); the structures on Platform 2 are not very tall, but the structure located on the western part of Platform 2 is the largest at the site. Two additional structures define the northern and eastern sides of the plaza. This plaza is closed, with very limited

ss. All the architecture is south of the Arroyo de los Palenques, but the sherd scatter continues north, closer to the village.

A second plaza (Plaza B) is located on top of Platform 1. This plaza is also very closed, as the structure that defines the eastern edge of Plaza A also defines the northern edge of this plaza, and the large structure on the western part of the platform defines the western edge. A small structure located on the southeastern corner of the platform connects two walls that form the eastern and southern sides of the plaza. The southern wall extends to the west along the southern edge of the platform and forms a narrow passage between the largest structure and the edge of the platform. A third plaza (Plaza C) is more open, abutting the two platforms to the north and east. One additional structure (Structure 7) is located just south of Platform 1. A third wall extends to the south from the southeastern corner of Platform 1 and with Structure 7 forms an area that is enclosed on three sides; however, it is not clear if this is also a plaza. Plaster floors were visible on Structure 2 and Platform 2. There is a tomb in Structure 8.

The site clearly had civic-ceremonial functions, with two plazas with very limited access. The core of the site was occupied in Late I (LI-58), II (II-39), and IIIA (IIIA-130). The site was largest in II and IIIA, and all but one outlying structure (Structure 8) was occupied in Late I. Ceramics from other phases were present on Platform 1 and Structure 4 (EF-3, EI-20, and IV-51). It is not clear, though, if any of the structures were occupied in the Early Formative or Early I, although Platform 1 may have been reused/occupied in Monte Albán IV. The site has a very high density of obsidian, including 38 obsidian blades and one noseplug. There is also a considerable amount of unworked chert, one ground stone ax, two polished hoe fragments, three pieces of shell (one worked), one piece of mica, one sherd disk, one figurine fragment, one urn fragment, and lots of fancy Monte Albán II cremas (Appendix IX, Fig. 33).

## EJ-SAZ-SAZ-4

There are eight small, very closely spaced terraces at this small (less than 1 ha) multicomponent site on a sloping ridge in the high piedmont on the west side of the Atoyac River, 2 km northwest of San Andrés Zabache. Monte Albán IIIA (IIIA-98) and V (V-235) are present. Some chipped stone was present, including several chert flakes and cores and one chert scraper. The only other significant artifact is one amarillo figurine fragment (Appendix IX, Fig. 34).

## EJ-SAZ-SAZ-9

This large (29.7 ha) multicomponent site is located in the low piedmont 150 m east of the Atoyac River on the southern edge of San Andrés Zabache. The site has a small, compact complex of four structures and two well-defined plazas. Two structures are linear mounds that may be a ballcourt; however, there are no structures on either end. The area between these two mounds has been defined as Plaza B. The southern structure of the possible ballcourt is the northern structure of a three-mound group that surrounds the second plaza. The structures form a small civic-ceremonial complex, with open access to the plazas. The entire site was occupied in Late I (LI-39) and V (V-243). The structures also were in use in IIIA (IIIA-107), when a much smaller part of the site was occupied. Sparse artifacts include one obsidian blade, one chert core and several flakes, two quartzite blades, and one ground stone fragment (Appendix IX, Fig. 35).

## EJ-SML-SML-1

Only one small mound was mapped at this small (1.9 ha) single-component IIIA site (IIIA-104) on a low piedmont rise 100 m west of the highway to Sola de Vega and 400 m west of the Atoyac River and San Martín Lachilá. The only nonceramic artifacts are one chert scraper and a few pieces of mica.

## EJ-SML-SML-11

One small mound was recorded at this small (less than 1 ha) single-component IIIA site (IIIA-96) in the low piedmont on the west side of the Sola de Vega highway, 1 km northwest of San Martín Lachilá and 200 m west of the Atoyac River. Only a trace of ceramics was observed; one mano was found nearby.

## EJ-SML-SML-12

This multicomponent site is located in the low piedmont on the west side of the Atoyac River (and east of the highway to Sola de Vega), on the northwest side of San Martín Lachilá. It comprises a compact architectural group that includes three platforms and three associated structures. One large platform (Platform 2) dominates the site. Platform 1 is located immediately to the east, and there is one structure on the northern edge of the platform. Platform 3 is located on top of the southwestern corner of Platform 2, and there is a structure located on top of this third platform. The third structure is located just south of Platform 2. Plaster floors are visible in Platform 1 and Structure 3. The entire complex is very open. An informant said there was a tomb in Structure 1, but it is not visible today. The village of San Martín Lachilá obscures part of the site, and a school has been built near the structures. The entire site (6.8 ha) is period IIIB–IV (IV-39). Much smaller IIIA (IIIA-102, 103) and V (V-239) components are located near but not on the structures. The only nonceramic artifacts are two manos and one metate fragment. There are mica sources nearby (Appendix IX, Fig. 36).

## EJ-SML-SML-14

This small (3 ha) single-component period IIIB–IV site (IV-40) is located on a sloping ridge in the low piedmont, 200 m east of San Andrés Zabache and 200 m southeast of the Atoyac River. The site has five very small terraces, several of which have good retaining walls. The only significant artifact

is one obsidian blade. The site is located near a very small quartz outcrop (Appendix IX, Fig. 37).

## EJ-SML-SML-16

This large (20 ha) multicomponent terrace site is situated on the top a steep ridge in the high piedmont the divides the Ejutla Valley from the Atoyac River (Fig. 7.13). The site begins on a ridge 1.25 km southeast of San Martín Lachilá and runs south along the top of that ridge for approximately 2 km. We mapped 59 terraces, most of which are small and most of which have retaining walls. The terraces are situated on the western slopes of the ridge; however, heavy vegetation on the site made it difficult to check all slopes where there may be additional terraces. Three low, connected platforms were constructed on the highest point of the ridge. We mapped at least six defensive walls among the terraces. The site is clearly defendable, but it is not clear if the site had many civic-ceremonial functions. The entire site is both IIIA (IIIA-109) and V (V-257). The Monte Albán IV component (IV-45) includes most of the terraces but not the platforms or terraces on the top of the ridge. Chipped stone at the site includes one obsidian blade, one chert core, and one white chert bird point. Other significant artifacts include one usable kilnwaster, three sherd disks, and one *sahumador* fragment.

The ridgetop location of this site above the Atoyac River is similar to the positioning of El Choco, on the western side of the river, to the north in southern Valle Grande. El Choco is clearly visible from this site; together they could have controlled access to the valley from the south (Appendix IX, Fig. 38).

## EJ-SML-SML-18

Two small, low mounds were recorded at this small (2.2 ha) multicomponent site on a low piedmont rise, 500 m east of the Atoyac River, on the northern edge of San Martín Lachilá. The structures are side by side with no plaza between; both are Monte Albán IIIA (IIIA-106) and V (V-240); however, the site is slightly larger in IIIA. There are few artifacts other than obsidian (one blade, one flake) and one urn fragment (Appendix IX, Fig. 39).

## EJ-SML-SML-22

This small (1.5 ha) single-component period IIIB–IV site (IV-43) is located on top of a high piedmont ridge in the hilly terrain that divides the Ejutla Valley from the Atoyac River. The site is 1.75 km east of the Atoyac and 2.25 km east of Santa Cruz Nexila. There are five dispersed terraces at the site; we mapped two small house foundations on one of the terraces. There are two clusters of structures; one is composed of two small mounds, and three structures and a plaza form the second cluster. The largest structure defines the northern edge of the plaza, which has been artificially leveled (Fig. 3.6). A second structure is along the western edge of the plaza, and a third very small structure is situated in the center of the plaza. The only nonceramic artifact is one retouched white chert flake (Appendix IX, Fig. 40).

## EJ-TAN-TAN-2 (and EJ-BSM-BSM-22) (Taniche)

This is a very large (approximately 175 ha) site located in the alluvium and low piedmont on both sides of the Ejutla River, beginning on the west side of Taniche and stretching west for 3.5 km to within 500 m of the northeast edge of the Río Ejutla village. In spite of its size, we mapped only four dispersed mounds at the site. Most of the site (except for the structures) is single-component Monte Albán V (V-176), but there are five areas where other phases are represented. The two largest structures are located on a small rise in the low piedmont at the northern edge of the site, 500 m northwest of dispersed houses on the northwestern edge of Taniche; they are Monte Albán IIIA (IIIA-57) and IIIB–IV (IV-10) only. There may have been a plaza between the two structures. There also may have been as many as three additional structures in this complex, but all have been severely impacted by plowing. This part of the site was originally labeled EJ-BSM-BSM-22, but subsequent survey to the west revealed sherd scatters that connect the mounds to the rest of site.

The other two structures at the site are isolated, located in separate areas of multiple occupations. One was occupied in Late I (LI-47) and II (II-23), in addition to V; it is located 200 m north of the confluence of the Ejutla River and its Coapa tributary, 50 m north of where the road from Taniche crosses the tributary. The second one, at the southwestern edge of the site, on a low rise 75 m northeast of Río Ejutla, is also Late I (LI-51, combined with LI-52) and IIIA (IIIA-117). The other phase components at the site are not associated with any architecture; these include two very small Early I occupations (EI-15, 17), a small Late I settlement (LI-50), two II components (II-32, 33), and two IIIA occupations (IIIA-116, 118).

This site has the highest density of obsidian we found at any site in Ejutla. Although obsidian is spread over the entire site, most of it is concentrated in a small area that is only Monte Albán V, in the northern part of the site, on the east side of the Coapa tributary. Over 100 obsidian flakes and 160 blades were recorded in addition to three cores (Fig. 10.30). Light gray obsidian may have been worked at the site in V. Other chipped stone includes several pieces of chert and basalt. Other significant artifacts include three shell beads, two greenstone beads, one piece of shell, mica, one spindle whorl, one urn fragment, and very fancy V pottery, including polychromes and Miahuatlán-style Huitzo sherds (Fig. 10.18). Much of the fancy pottery and the beads were found together in one small area that may have been an elite Monte Albán V residence (Appendix IX, Fig. 41).

## EJ-YO-YO-1 (and EJ-YO-YO-2)

This site is a dispersed ceramic scatter on two connected ridges in the middle piedmont, approximately 1.5 km southwest of La Noria. The site is on a high point with good views of surrounding area. Ceramics were scarce, but all were Monte

V (V-339, 341). We originally mapped this as two separate sites, covering together about 2 ha. This appears to be Markman's (1981) site 502, where he observed two low house mounds. They were no longer visible when we visited the site. The site in known locally as Pueblo Viejo.

## EJ-YO-YO-11

This small (2.5 ha) single-component Late I site (LI-62) is situated on a low piedmont rise 150 m north of the Miahuatlán River, less than 500 m east of Barrio de Arriba (part of Yogana), at the southern edge of the Ejutla Valley. We mapped three mounds, one of which is just a house foundation. The three structures form three sides of a small plaza. The largest structure is situated on the east side of the plaza. The site may have been a small Late I civic-ceremonial site, similar to several other Late I sites in Ejutla with small mound complexes (such as EJ-LP-LP-2). The only nonceramic artifacts are a few chert flakes (Appendix IX, Fig. 42).

## EJ-YO-YO-12 (Yogana)

This multicomponent site is situated on the northern tip of a long low piedmont ridge, just south of a bend in the Miahuatlán River and east of Arroyo de los Higos, at the southern edge of the Ejutla Valley, 1 km southeast of Yogana. Three sides of the ridge slope very steeply down to the river and arroyos on either side, while to the south the ridge rises slowly up into middle piedmont terrain (Fig. 5.16). The site has a formal architectural group with 10 structures, including two large platforms, one enclosed plaza, several walls, and one terrace. The terrace does not appear to be residential. The four-mound group that surrounds the plaza is located at the southern end of the site. Whereas access to the plaza appears to be limited, there is a clear entryway into the plaza on the northwestern corner, between Structure 1 and Structure 4. Immediately north of this four-mound group is a large platform and two structures. One linear mound is situated on the northwest corner of the platform, and an adjoining wall extends along the northern end of the plaza and part way down the eastern side, forming a small partially enclosed area on the northern end of the platform. Plaster floors are visible in two of the structures, and there is a tomb in Structure 8. The site has many similarities to EJ-SAA-SAA-15.

The entire site (8.8 ha) was occupied in Monte Albán II (II-44) and IIIA (IIIA-132). The site was not quite as large in Late I (LI-61) or V (V-350), even though we found ceramics from all those phases on the structures. Monte Albán IIIB–IV ceramics (IV-52) were found only on Platform 2. A small Early I occupation (EI-21) is not associated with any architecture. There is lots of obsidian on the site, including 36 blades and two projectile points. Other chipped stone includes quite a bit of chert (two points, one scraper, two bifaces, and two cores) and a few quartz flakes. Ground stone includes three manos, five metate fragments, one celt, and one small mano/abrader. Other significant artifacts include six pieces of shell, mica, four sherd disks, one urn fragment, two figurine fragments, and quite a bit of fancy II and IIIA pottery. Markman (1981) recorded this site during his survey of the Miahuatlán Valley (Appendix IX, Fig. 43).

## EJ-YO-YO-17

This small site (less than 1 ha) is located in the low piedmont, 80 m south of the Miahuatlán River, near dispersed houses on the west side of Barrio de Arriba. We found mostly G-35s that looked like Monte Albán IIIA (IIIA-133). This appears to be Bernal's site 271 at Yogana. Several urn fragments thought to be IIIB–IV were collected, but little else was observed. We did not see any urn fragments, but this site may be Late Classic as well.

## OC-OC-BV-11

One small, low mound with two visible rows of stones was mapped at this small (less than 1 ha) single-component Monte Albán IIIA site (IIIA-2) on a ridgetop in the middle piedmont at the north edge of the Ejutla Valley, 1 km west of Buenavista. The few nonceramic artifacts include one obsidian blade and one piece of ground stone. We also collected one sherd disk.

## OC-OC-BV-12

This small (less than 1 ha) single-component V site (V-3) is located on a low piedmont ridge at the northern edge of the Ejutla Valley, 1.5 km southwest of Buenavista. The ridge is between two streams that flow west to the Atoyac River. There is one small, low mound, the top of which is defined by stone walls. The only nonceramic artifact is one obsidian blade.

## OC-SJP-SJP-108

This multicomponent terrace site is situated on a small middle-piedmont knob that overlooks the low piedmont of southern Ocotlán, at the northern edge of the Ejutla survey boundary, 1.5 km west of San José Progreso. We recorded 64 small terraces, one mound, and 11 stone house foundations at the site. The mound is situated at the very top of the knob, while the house foundations are scattered on and among the terraces on the southern slope of the ridge. The entire site, which covers 3.9 ha, is Monte Albán IIIA (IIIA-34), with just a small V occupation (V-132) at the very top of the hill. Both chipped and ground stone was present, including one mano, one obsidian flake, one chert scraper, one utilized chert flake, and some chert debitage. There are considerably more oxidized orange ceramics at this site than at other sites in Ejutla. There were six urn fragments (Appendix IX, Fig. 44).

## OC-SJP-SJP-109

Two small, low mounds and a trace of ceramics were mapped at this small (less than 1 ha) single-component Monte

Albán IIIA site (IIIA-35) on a hilltop in the low piedmont, on the west side of a reservoir, 750 m southwest of San José Progreso (Appendix IX, Fig. 45).

## OC-SJP-SJP-110

This small (less than 1 ha) single-component Monte Albán IIIA site (IIIA-36) is located on the top of a high piedmont ridge, 1.75 km east of the abandoned mine 1 km east of San Martín de los Canseco. The site also is 500 m east of the *mojonera* marking the boundary between San Martín de los Canseco and San José Progreso. There is one small, low mound and one wall that may define the edge of a terrace. The only nonceramic artifacts are some quartz crystals. The site is known locally as La Escalera and La Sienigita (Appendix IX, Fig. 46).

## OC-SJP-SJP-129

This very defendable single-component Monte Albán IIIA site (IIIA-37) is situated on the top of a very high and steep mountain ridgetop that descends the northern side of El Labrador, approximately 5.0–5.5 km southeast of San José Progreso (Fig. 7.16). The site appears to have had military/defensive functions. The site has compact architectural groupings, with 13 structures (including one small platform), eight mapped terraces, a house foundation on one of the terraces, and several defensive walls. A four-mound group that encloses a plaza with very limited access is situated on the highest and most inaccessible part of the ridge, at the western edge of the site. Several terraces extend down the ridge to the southwest, although the dense vegetation may have obscured other terraces on the steep slopes. Down the ridgeline to the east, in a saddle area, are two more clusters of mounds. The nearest cluster has two mounds that are connected by a low raised area. The slope south of these two mounds has lots of building stone but no preserved structures or terraces. The other cluster, 200 m farther east, includes six structures, one of which is a small platform with a small mound on it. There is a small passageway in the western edge the platform and a tall mound on the eastern edge. There is another tall mound to the east; that mound is separated from a pair of small linear mounds by a small terrace. The two linear mounds appear to be the sides of a small ballcourt. The site covers 10.7 ha.

The site has lots of chipped and ground stone, including one quartz projectile point, four quartz scrapers, six unworked quartz crystals, several chert flakes, one mano, one celt, and two metate fragments. Obsidian is especially abundant, including 20 obsidian blades and three obsidian points. Two obsidian flakes have been shaped to fit into a club. Other significant artifacts include one unworked piece of greenstone (Appendix IX, Fig. 47).

# Appendix IX. Drawings of Ejutla Sites with More Than One Mound or Terrace

This appendix contains drawings of all field-numbered sites in Ejutla with more than one mound or terrace. Site descriptions are provided in Appendix VIII, and terrace and structure dimensions are given in Appendix VI and Appendix VII. Structures (mounds) and terraces are numbered, as are plazas, platforms, and walls. In several instances, mounds or terraces were identified and numbered at nearby sites that initially were considered to be separate sites. However, when completely surveyed, the architectural features were found to be connected by continuous sherd scatters so that numbers are repeated in separate parts of the site. To avoid errors in renumbering, we have left the features as originally numbered in the field and have marked the original field designations on the drawings.

House foundations also are numbered on the drawings, except for those located on terraces. In a few cases, we have changed the designation of very low structures to house foundations (and this is reflected in the architecture files).

Topographic contours (20 m intervals) are included on the drawings for most sites. Phase boundaries are drawn where relevant, and all phase components associated with structures are listed on the drawings.

EJ-CA-CA-1
MAP A

6-10-20
6-10-23
6-11-218

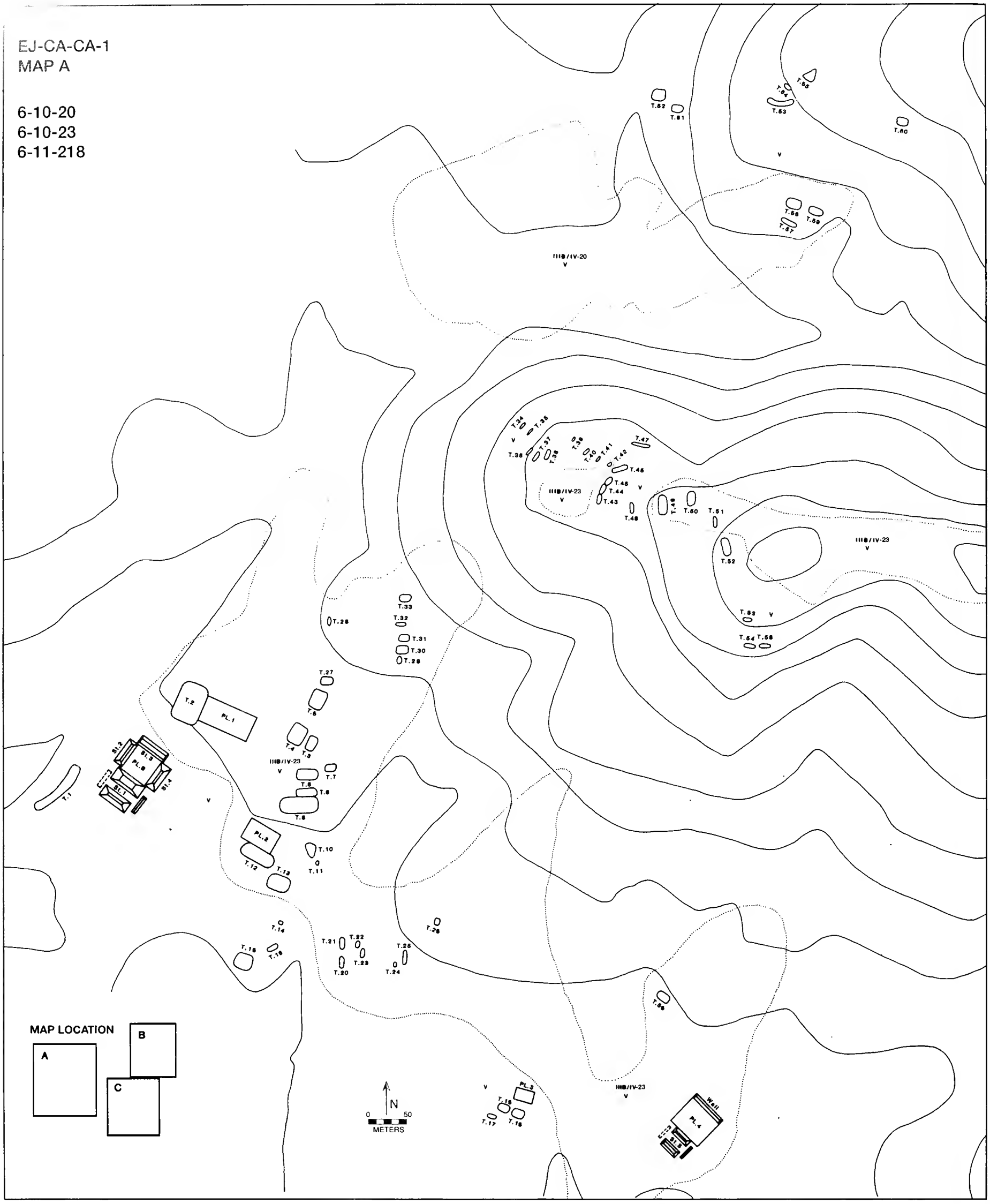



FIG. IX.1a. EJ-CA-CA-1 (western part of site).

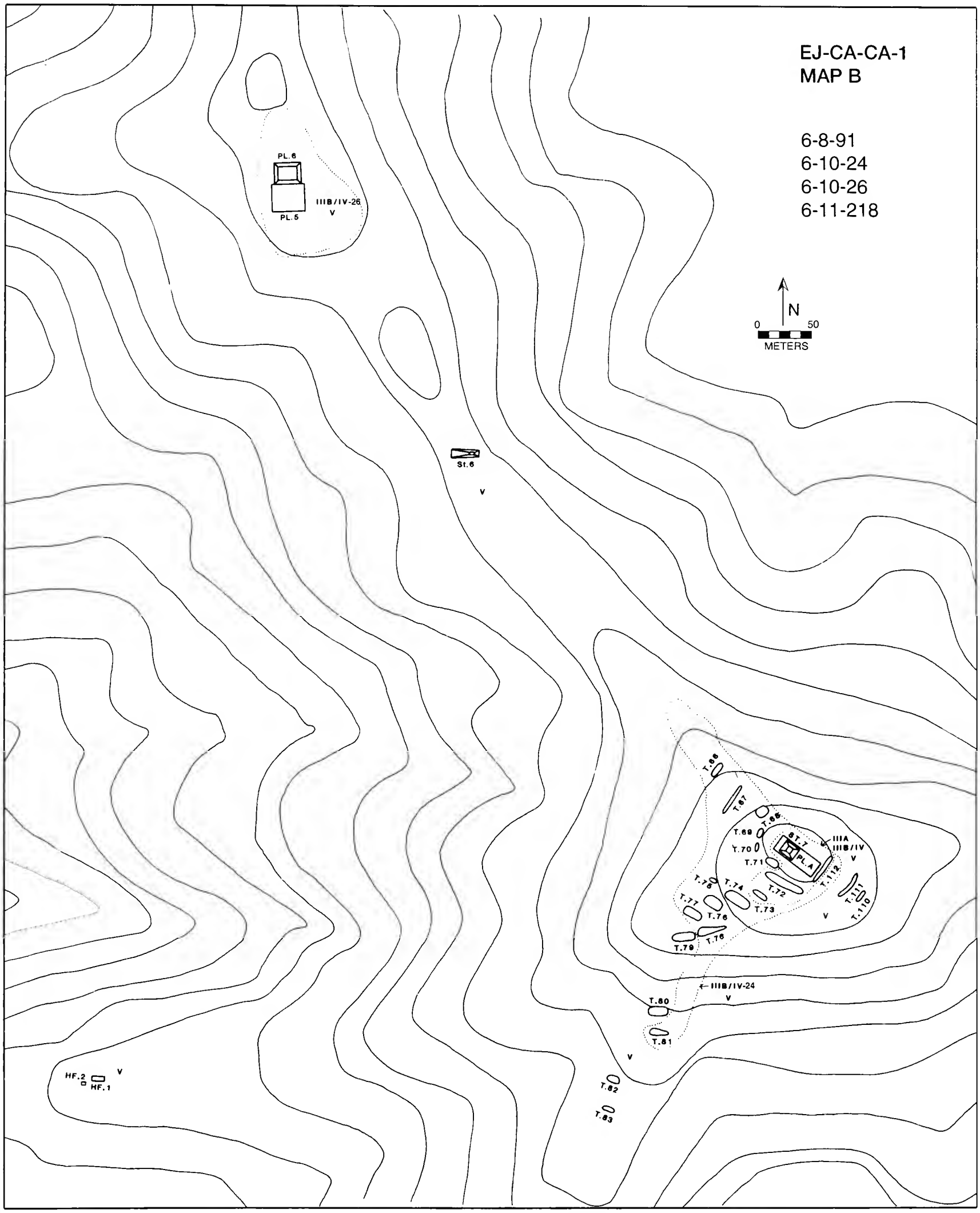



FIG. IX.1b. EJ-CA-CA-1 (northern part of site).

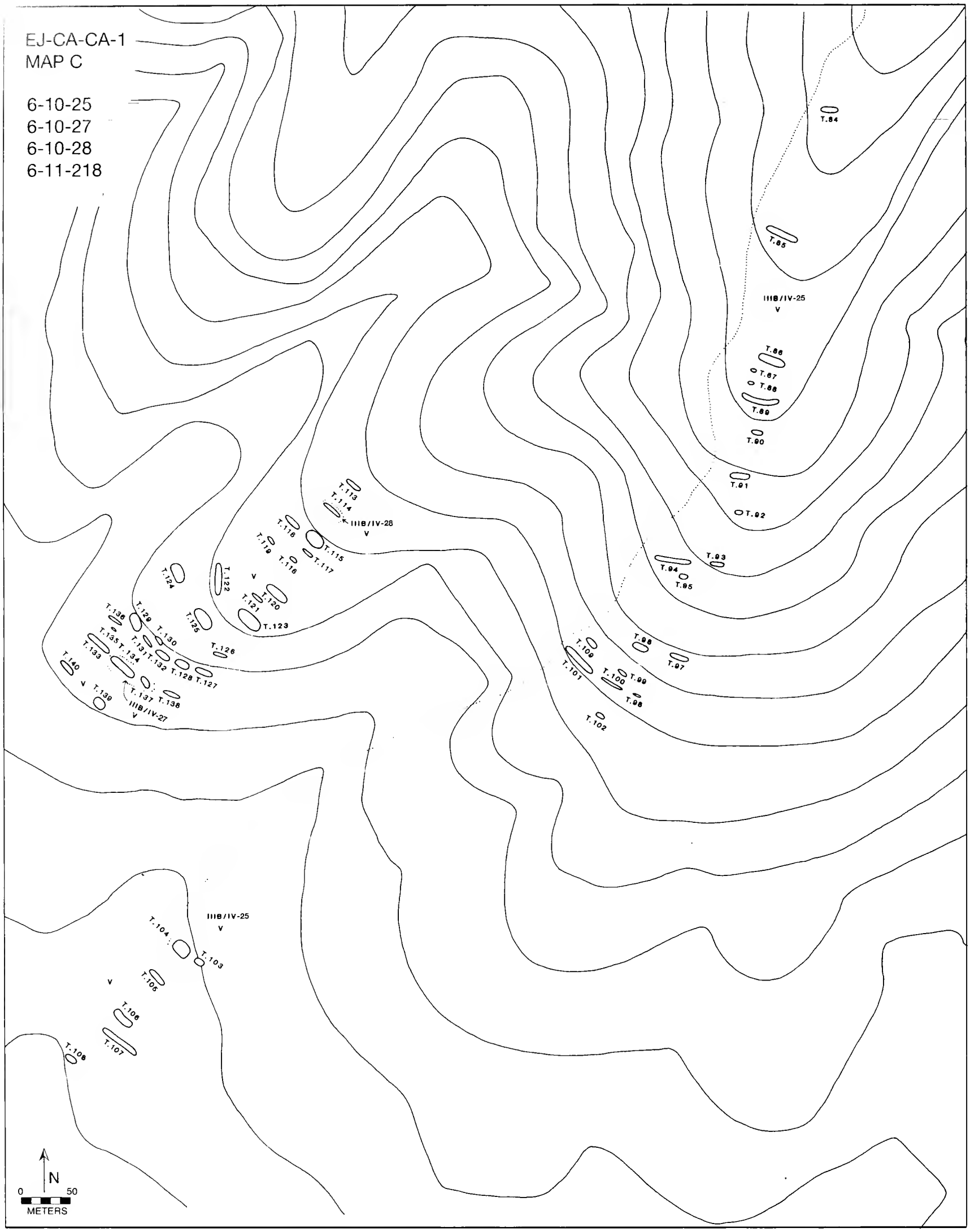



FIG. IX.1c. EJ-CA-CA-1 (southern part of site).

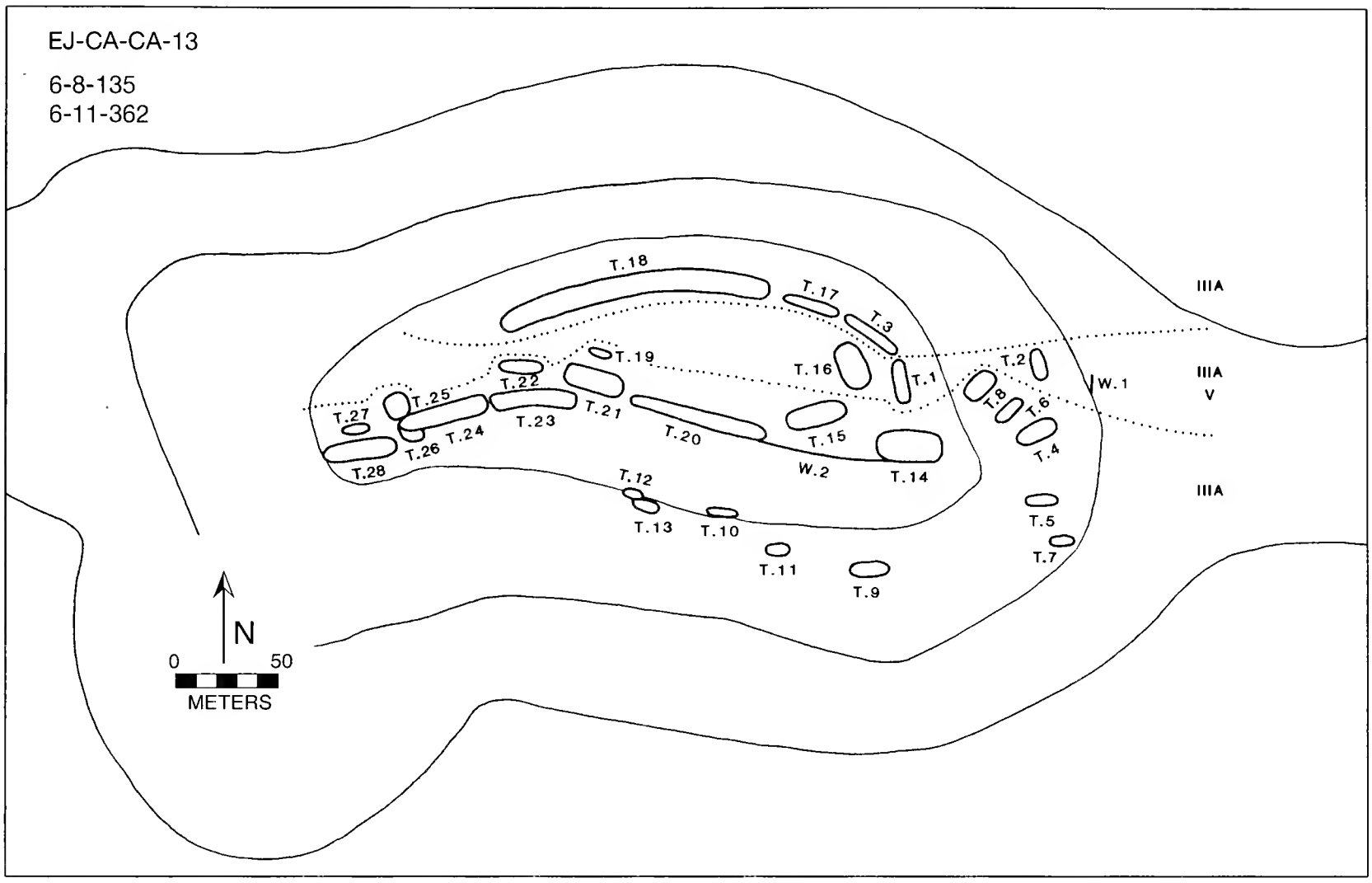



FIG. IX.3. EJ-CA-CA-13.

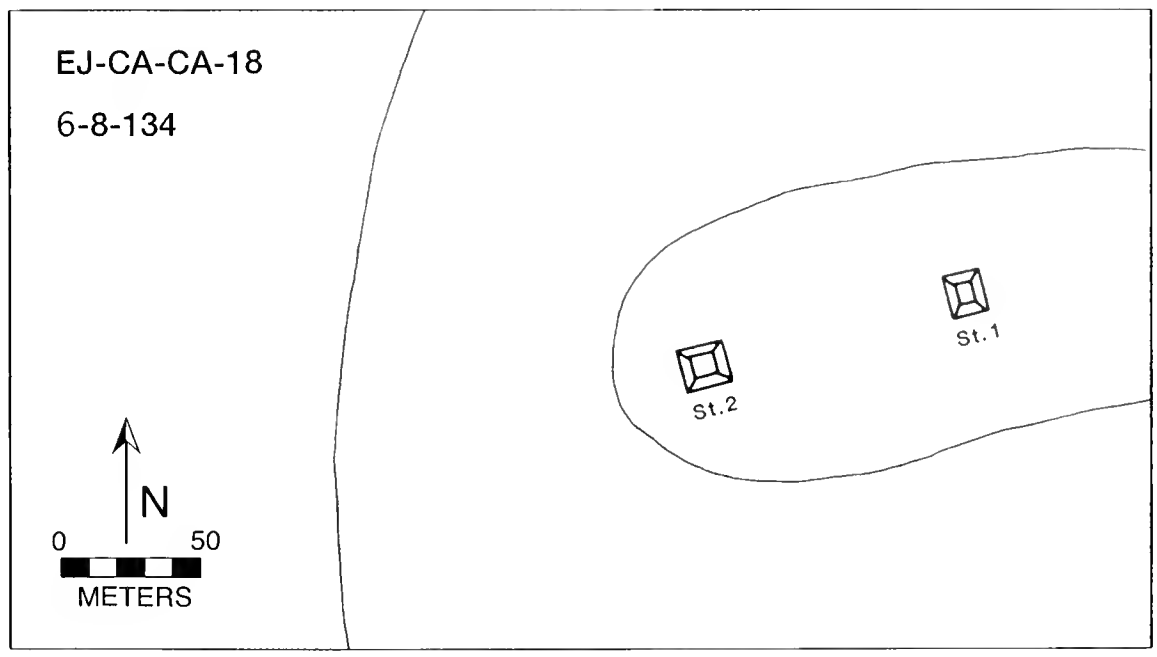



FIG. IX.3. EJ-CA-CA-18.

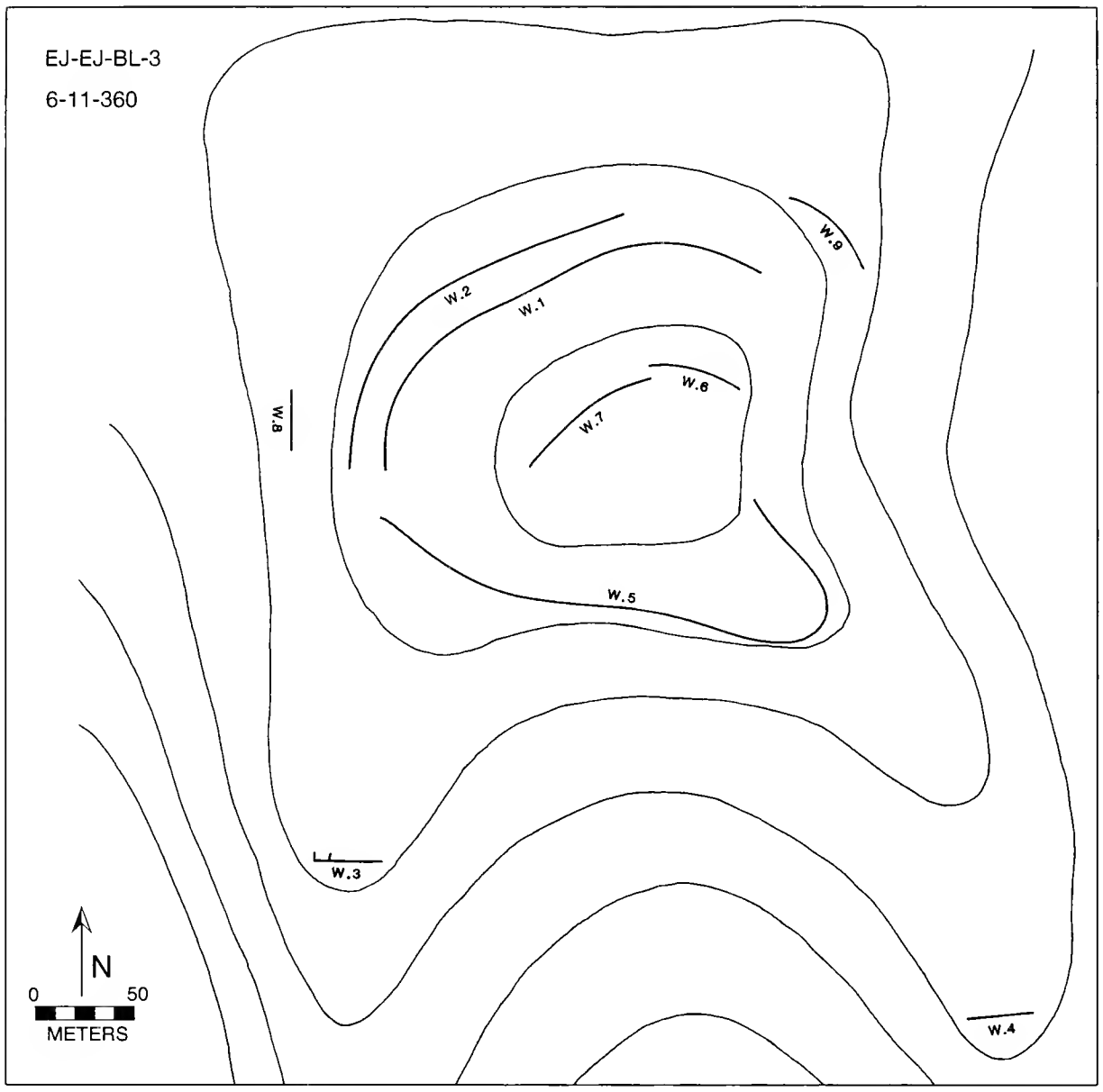



FIG. IX.4. EJ-EJ-BL-3.

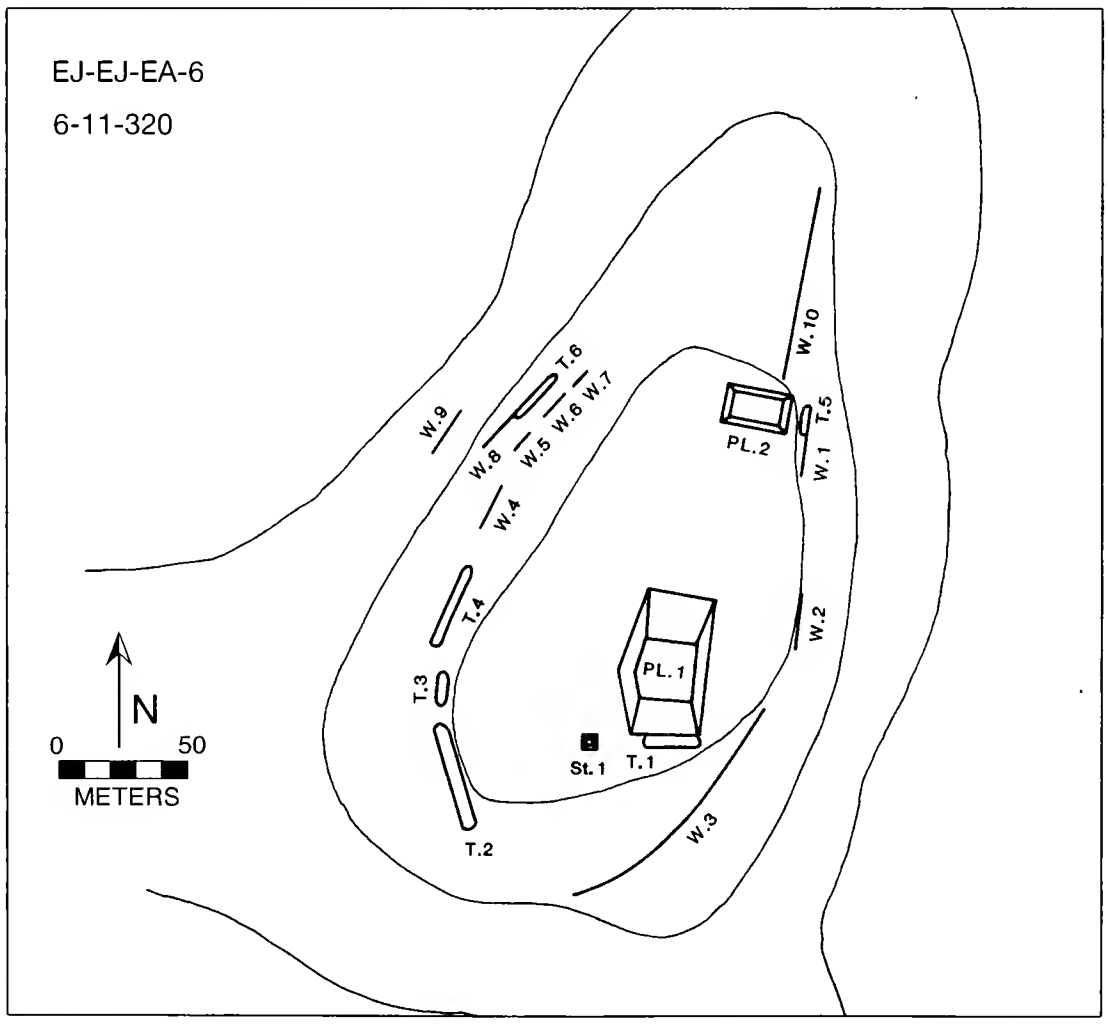



FIG. IX.5. EJ-EJ-EA-6.

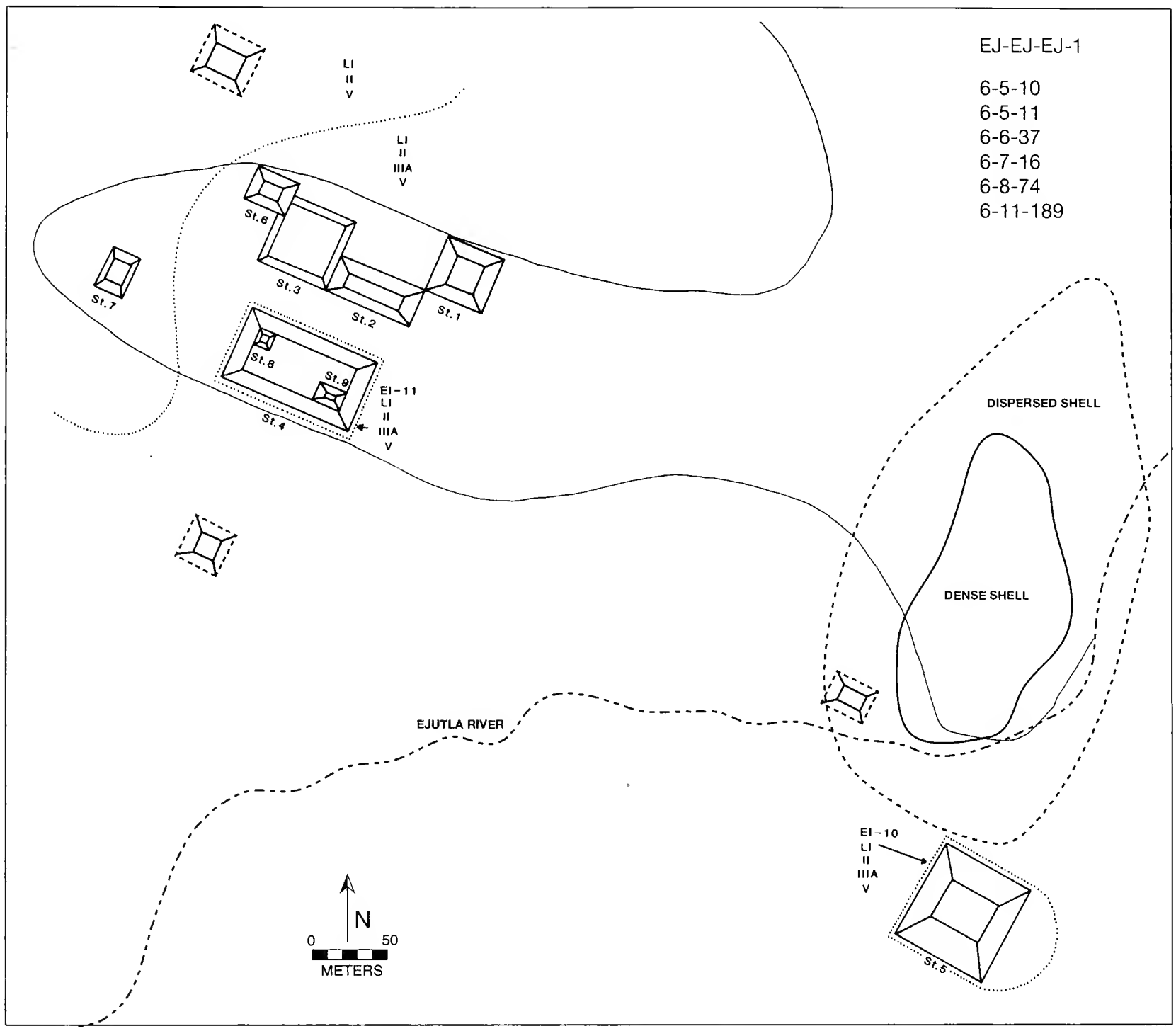



FIG. IX.6. EJ-EJ-EJ-1.

FIG. IX.7. EJ-EJ-EJ-27.

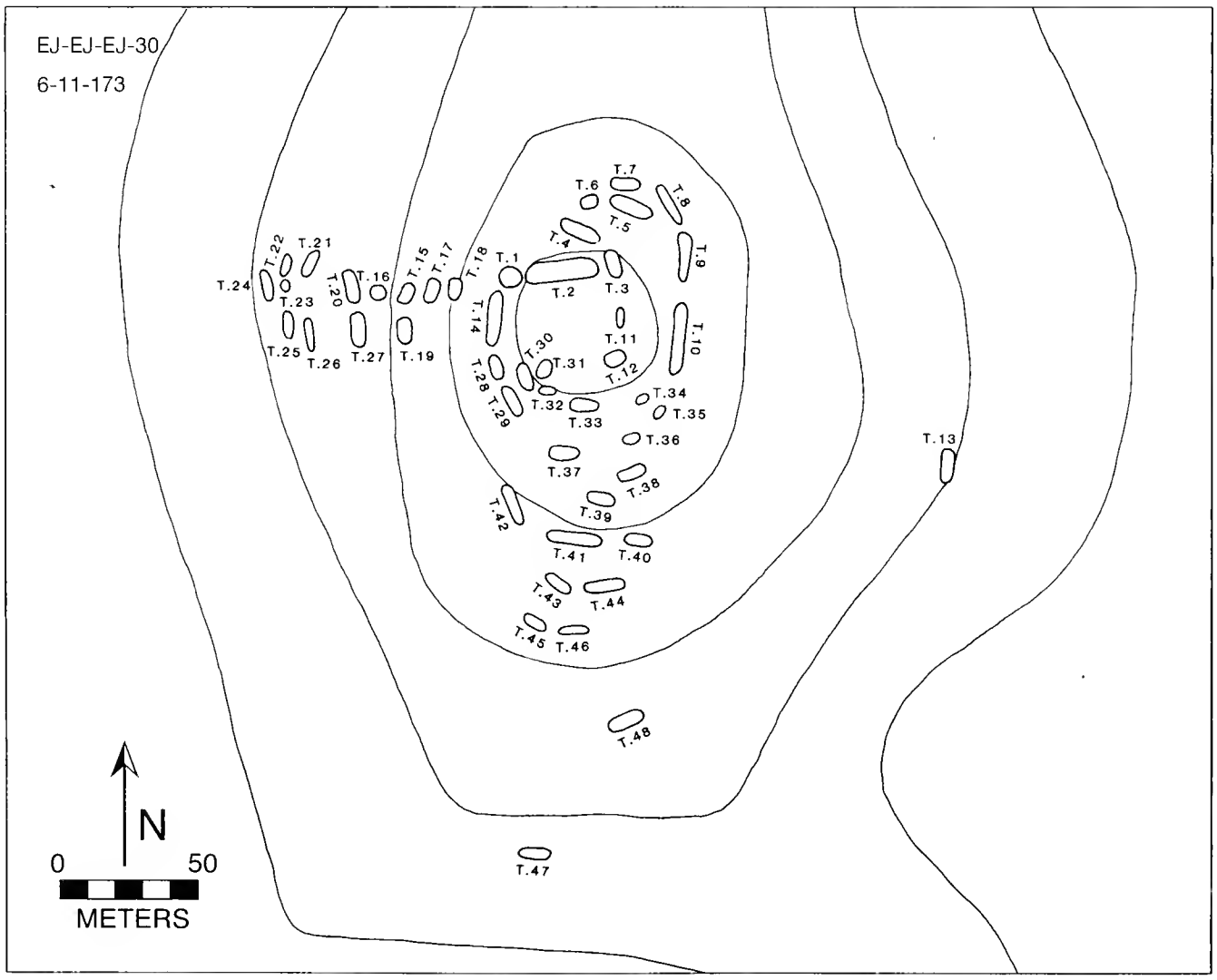



FIG. IX.8. EJ-EJ-EJ-30.

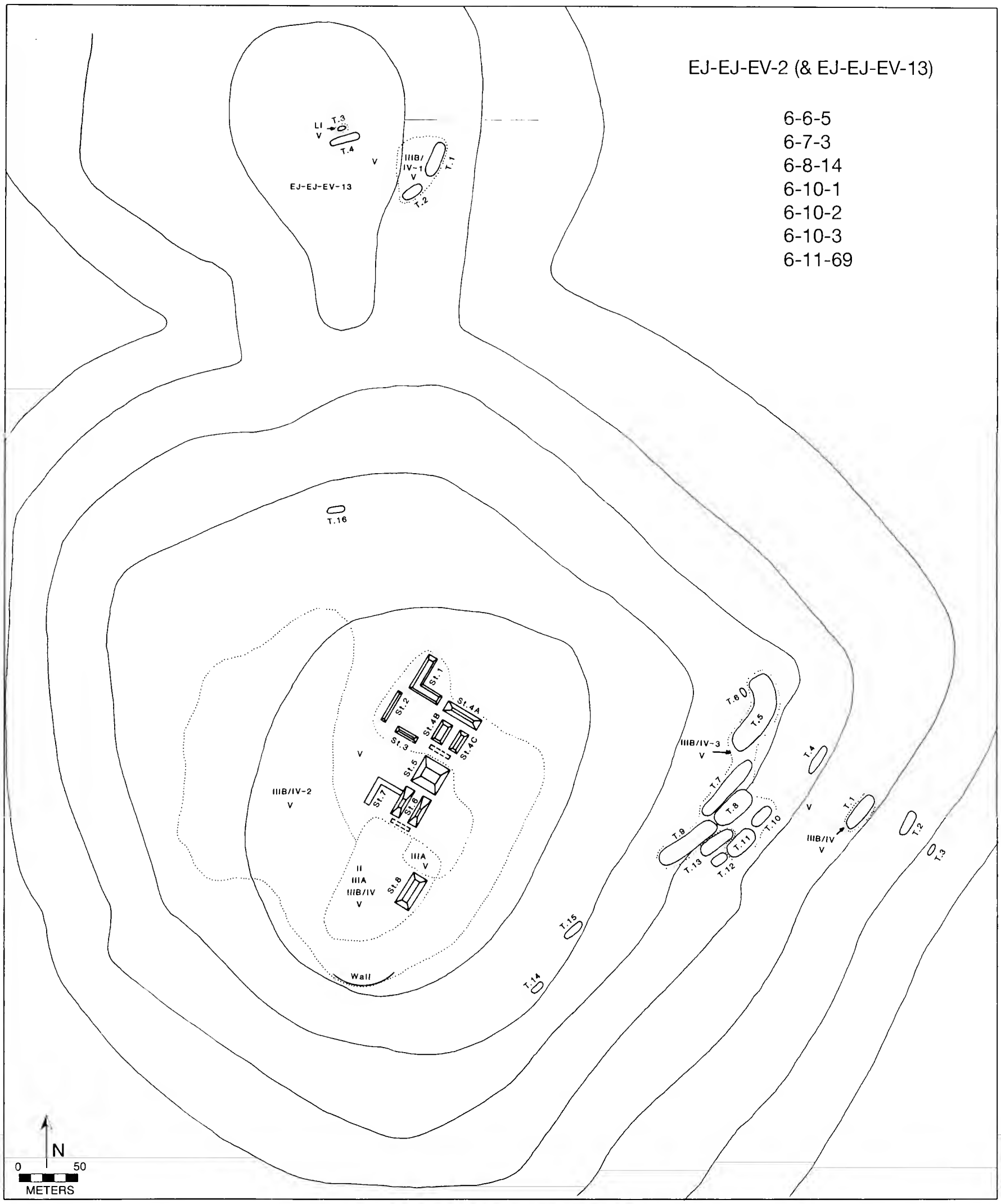



FIG. IX.9. EJ-EJ-EV-2 (and EJ-EJ-EV-13).

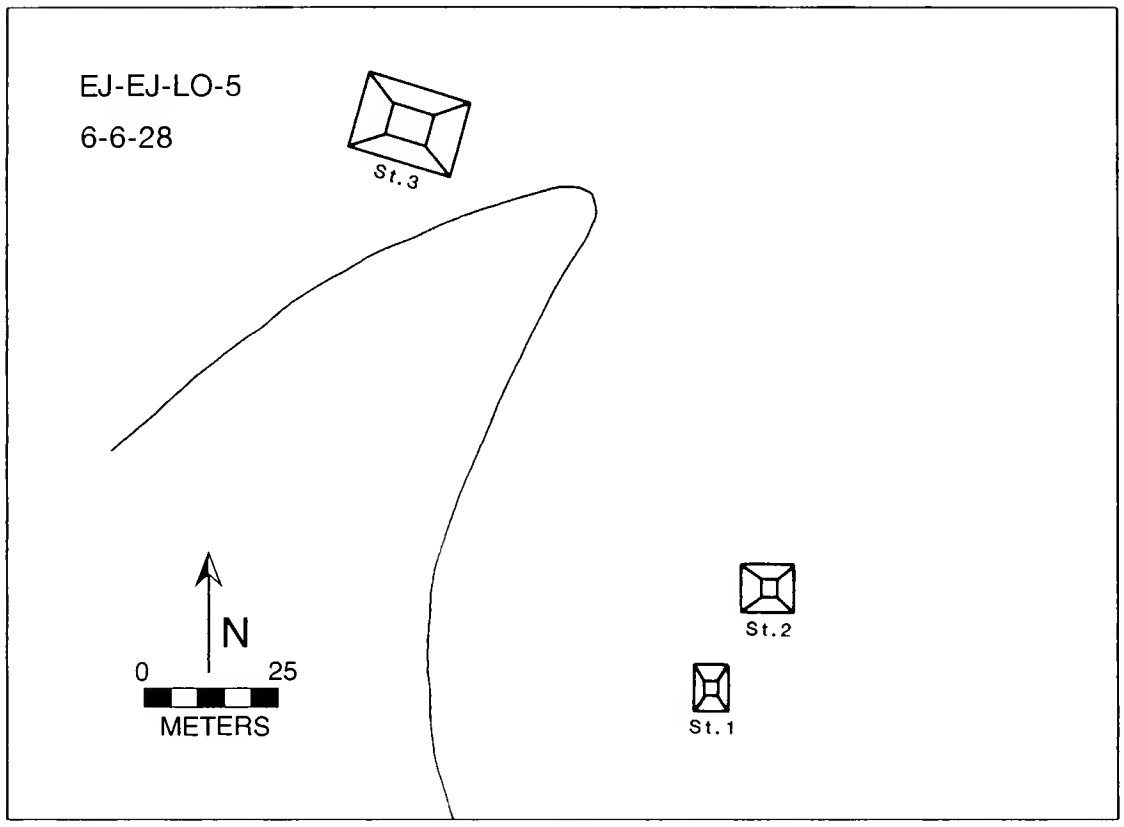



FIG. IX.10. EJ-EJ-LO-5.

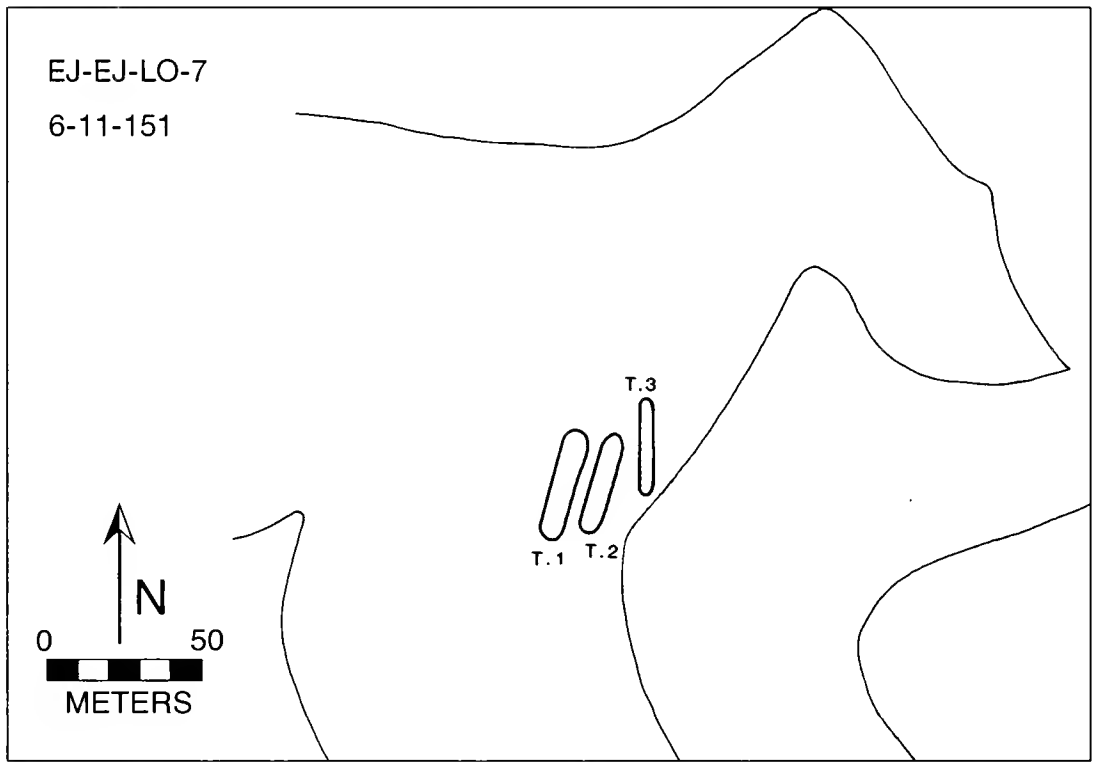



FIG. IX.11. EJ-EJ-LO-7.

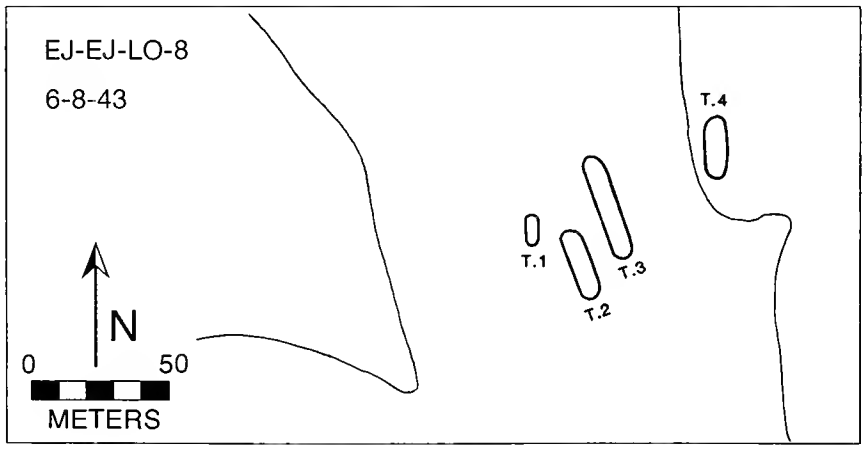



FIG. IX.12. EJ-EJ-LO-8.

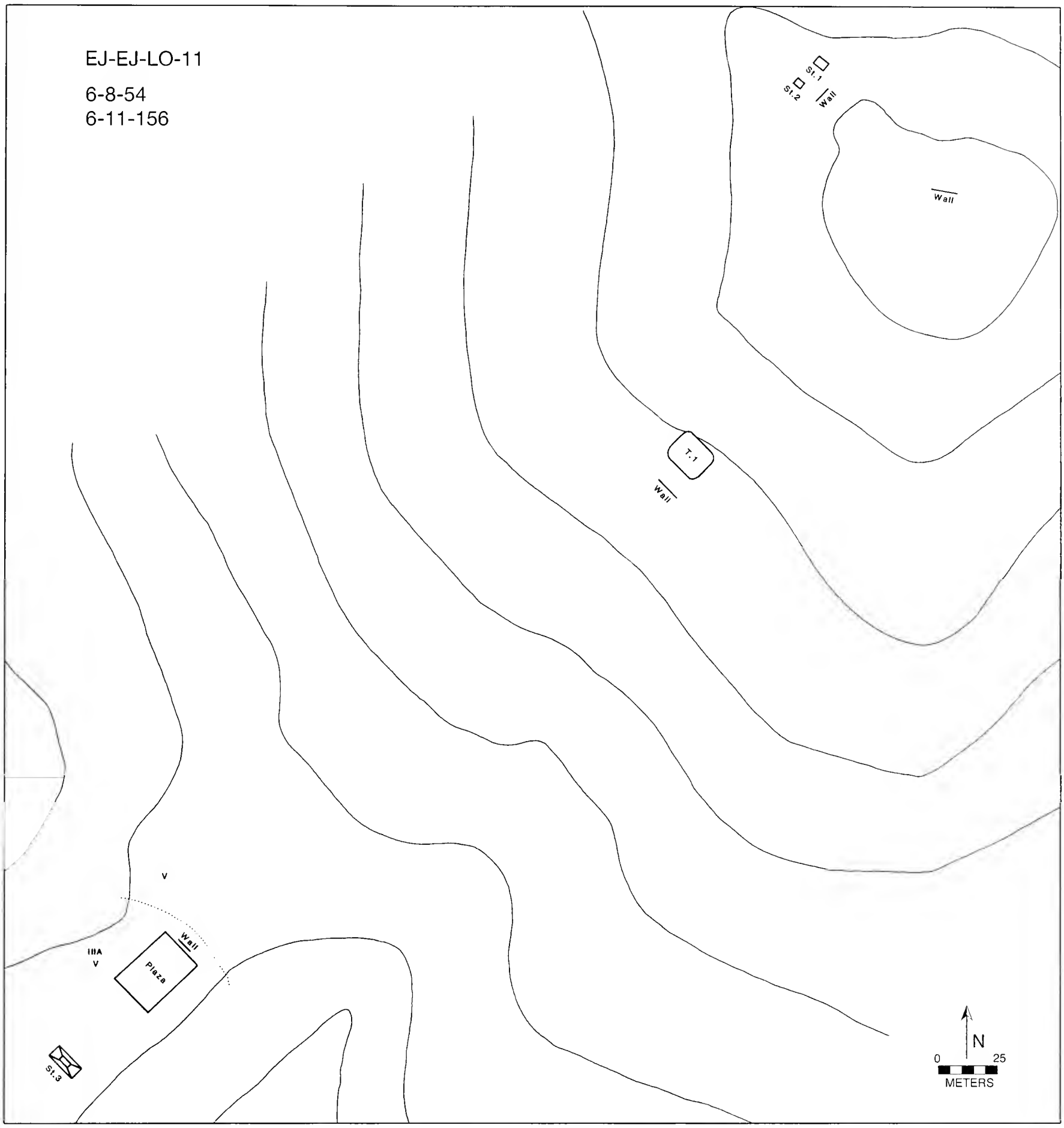



FIG. IX.13. EJ-EJ-LO-11.

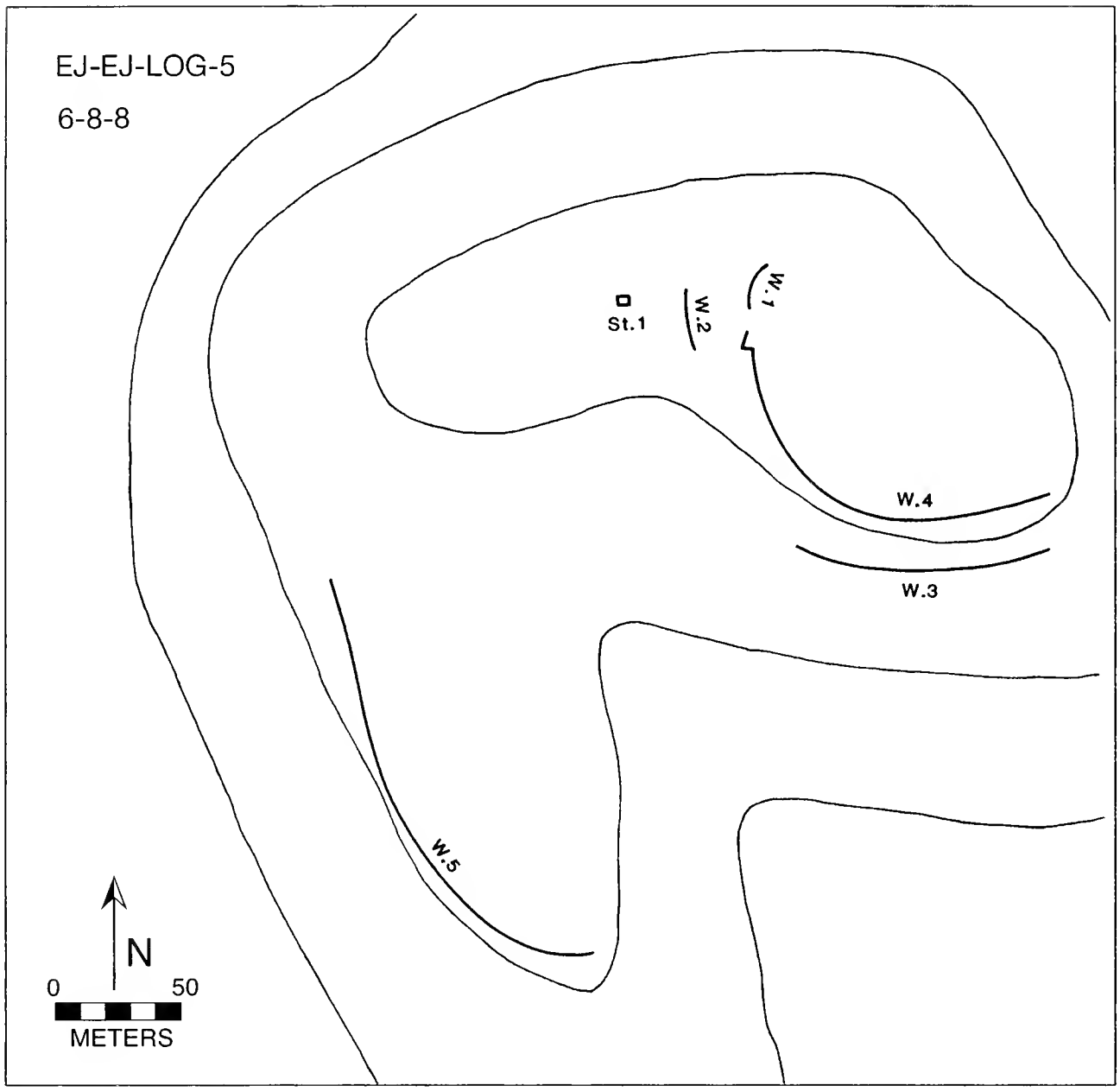



FIG. IX.14. EJ-EJ-LOG-5.

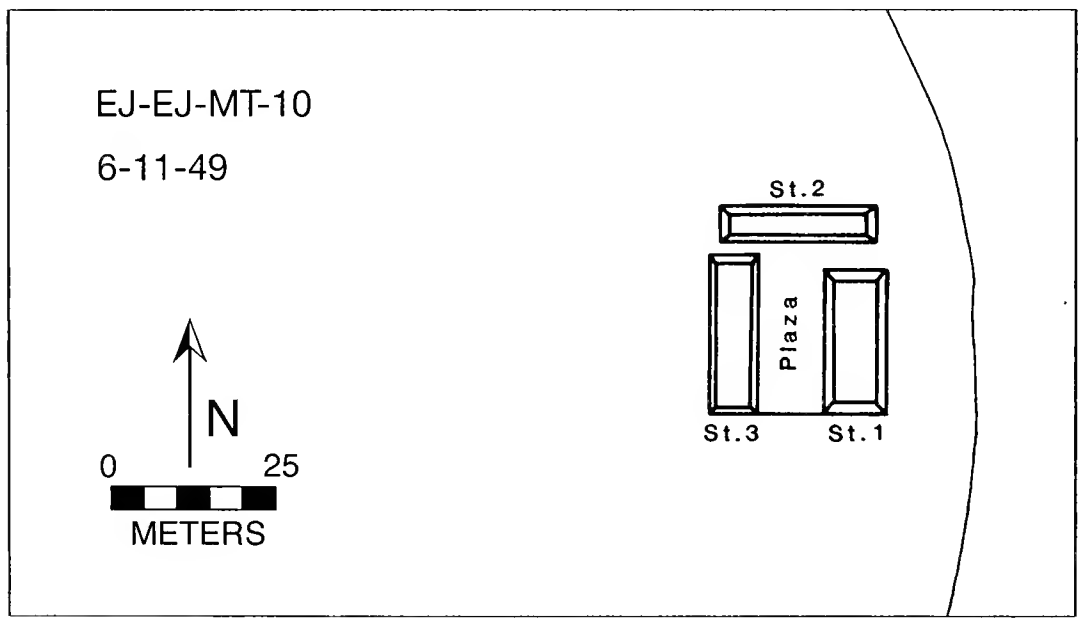



FIG. IX.15. EJ-EJ-MT-10.

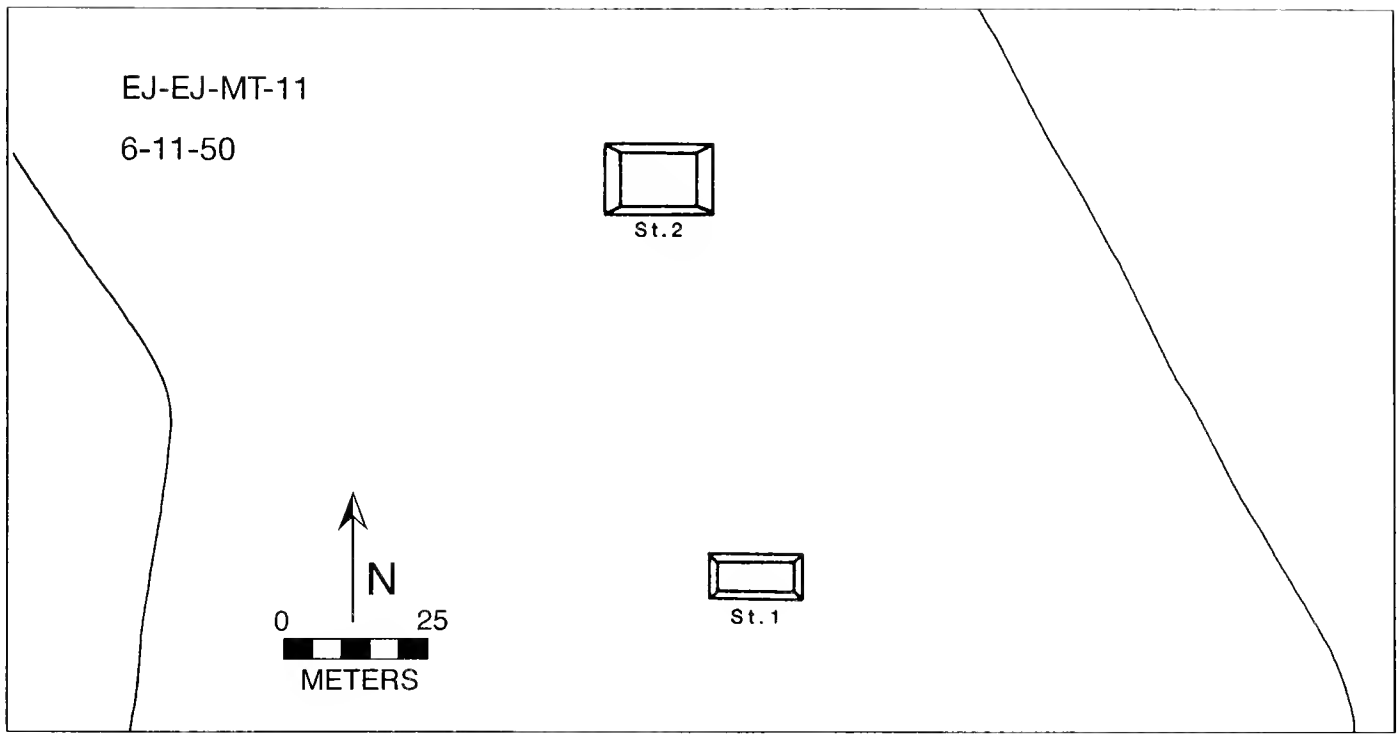



FIG. IX.16. EJ-EJ-MT-11.

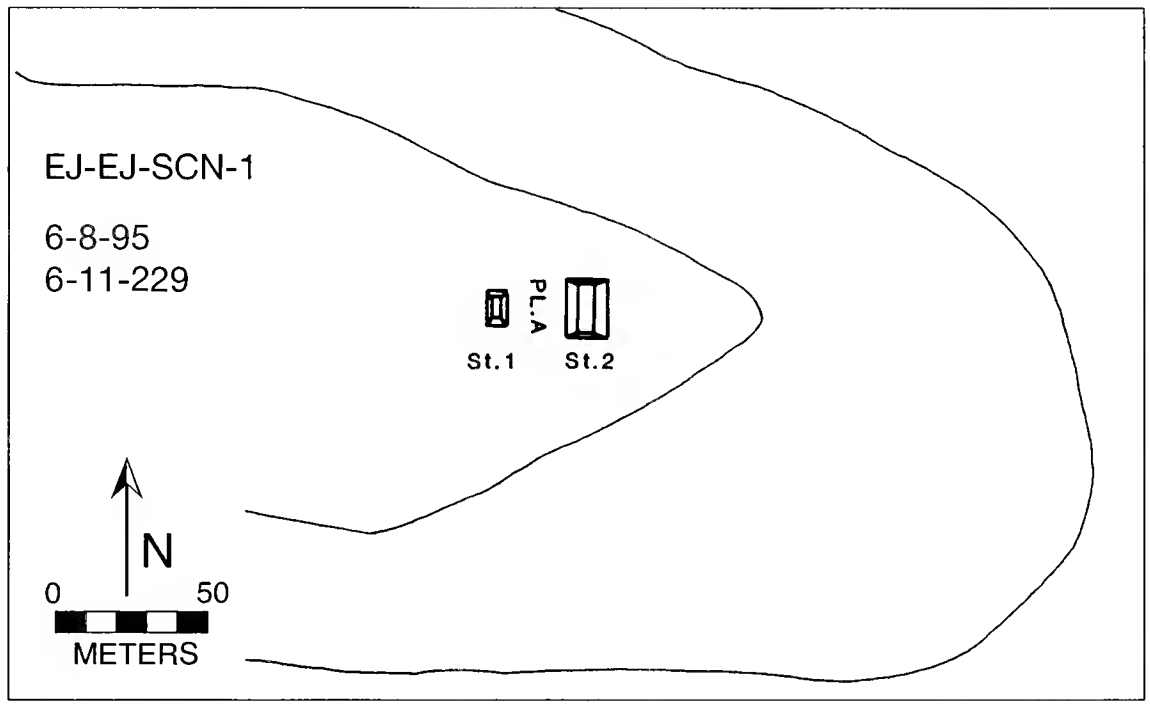



FIG. IX.17. EJ-EJ-SCN-1.

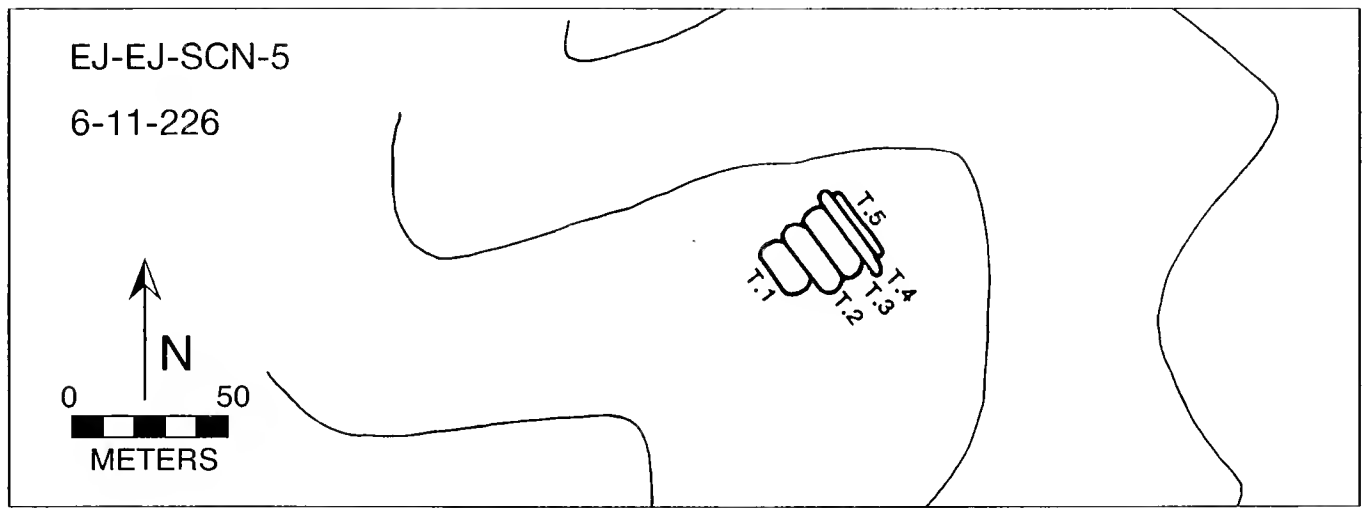



FIG. IX.18. EJ-EJ-SCN-5.

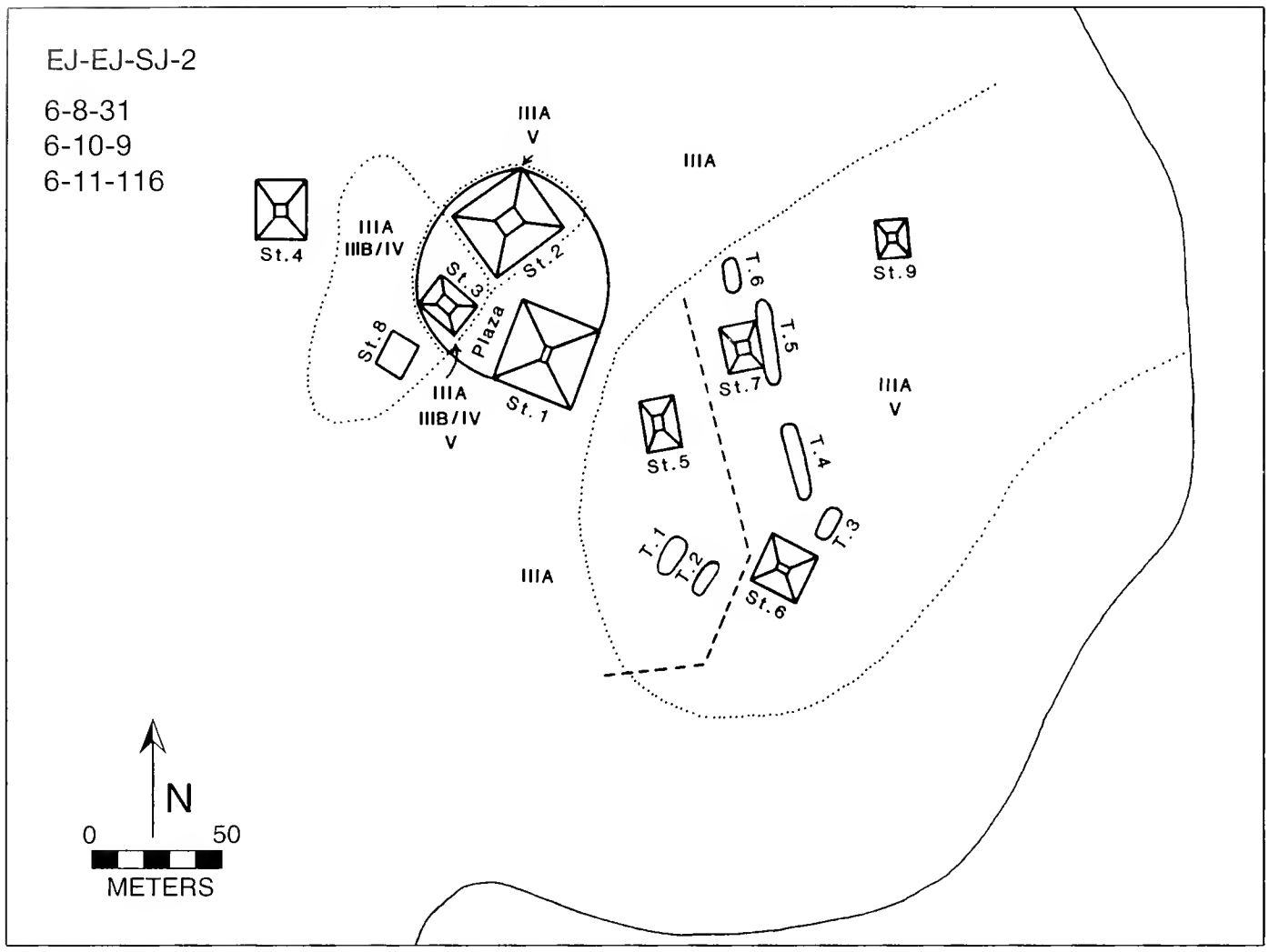



FIG. IX.19. EJ-EJ-SJ-2.

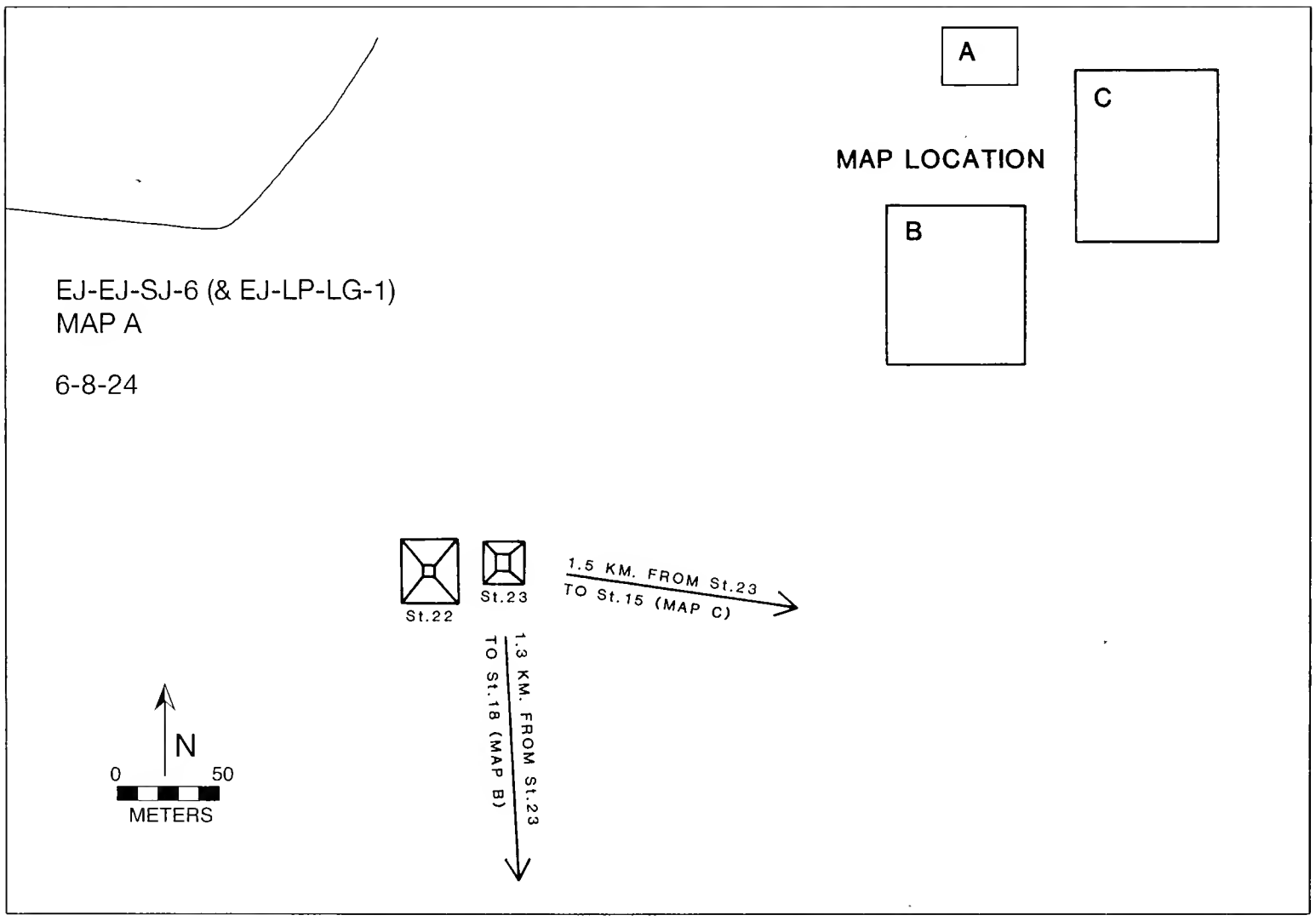



FIG. IX.20a. EJ-EJ-SJ-6 (isolated structures and key).

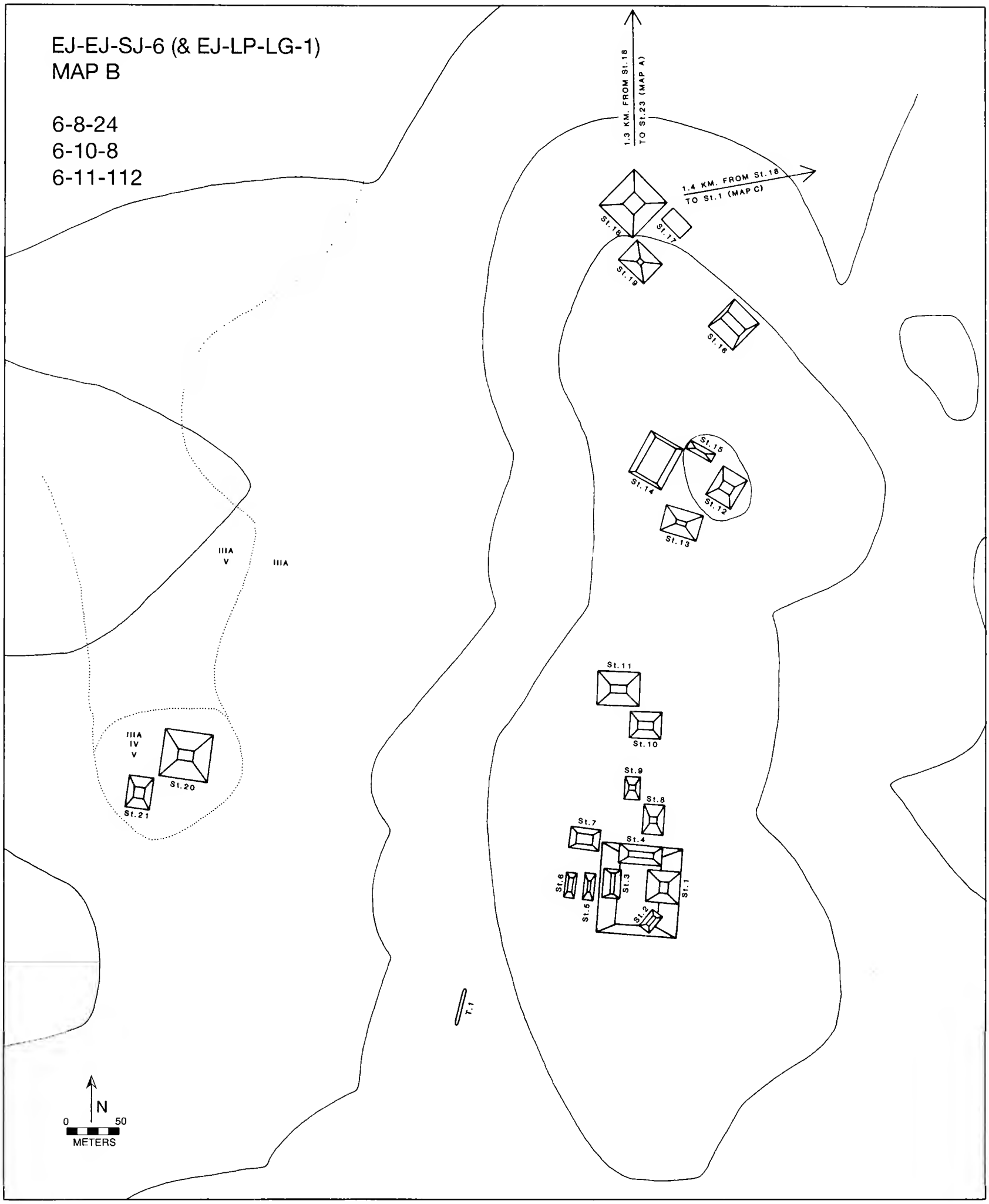



FIG. IX.20b. EJ-EJ-SJ-6 (and EJ-LP-LG-1) (western mound complex).

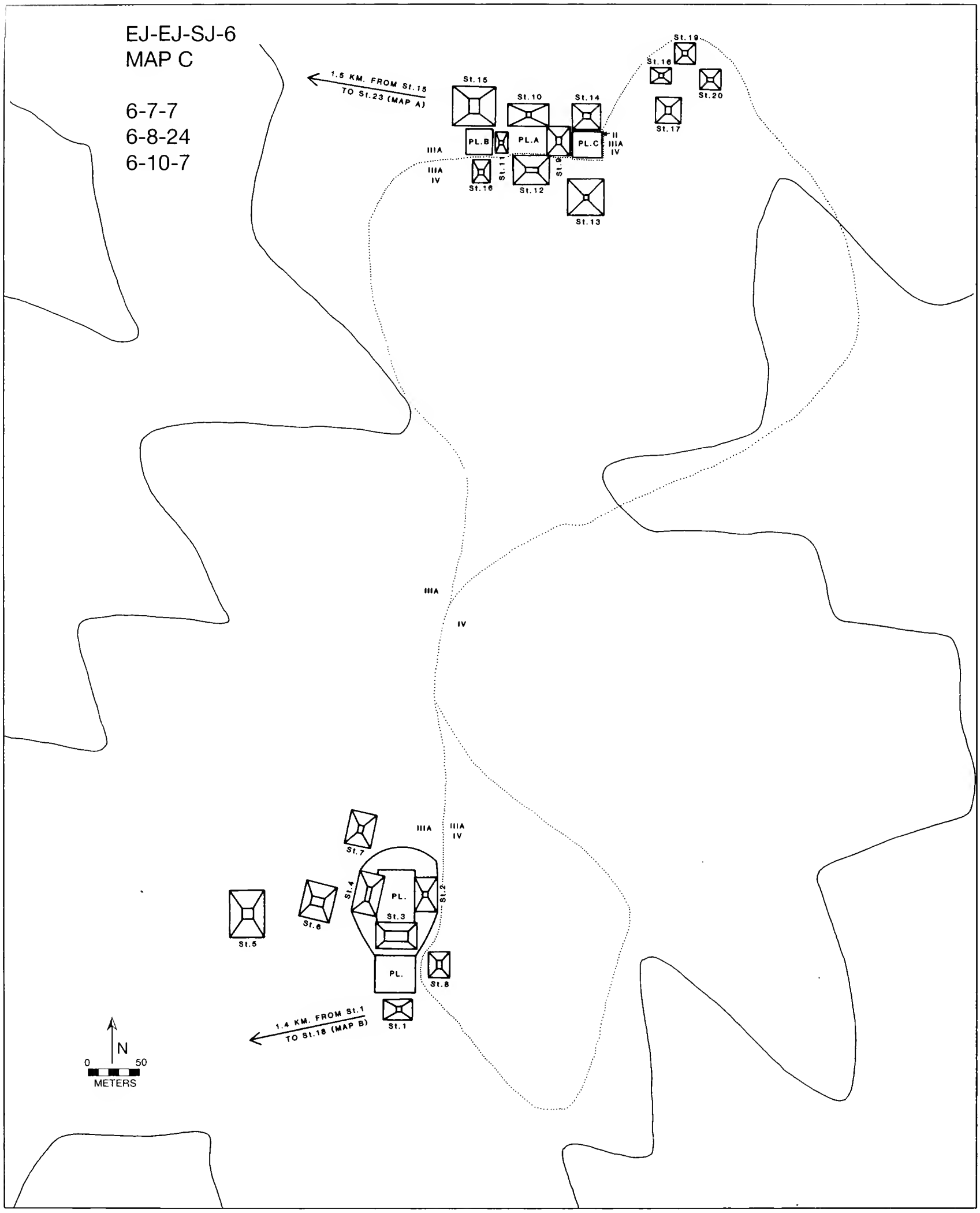



FIG. IX.20c. EJ-EJ-SJ-6 (northern and southern mound complexes).

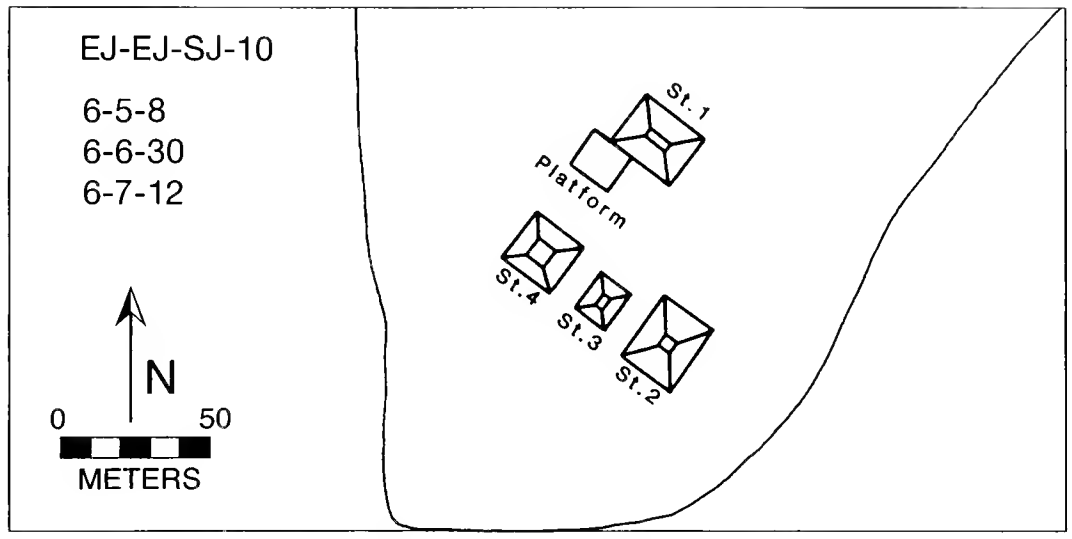



FIG. IX.21. EJ-EJ-SJ-10.

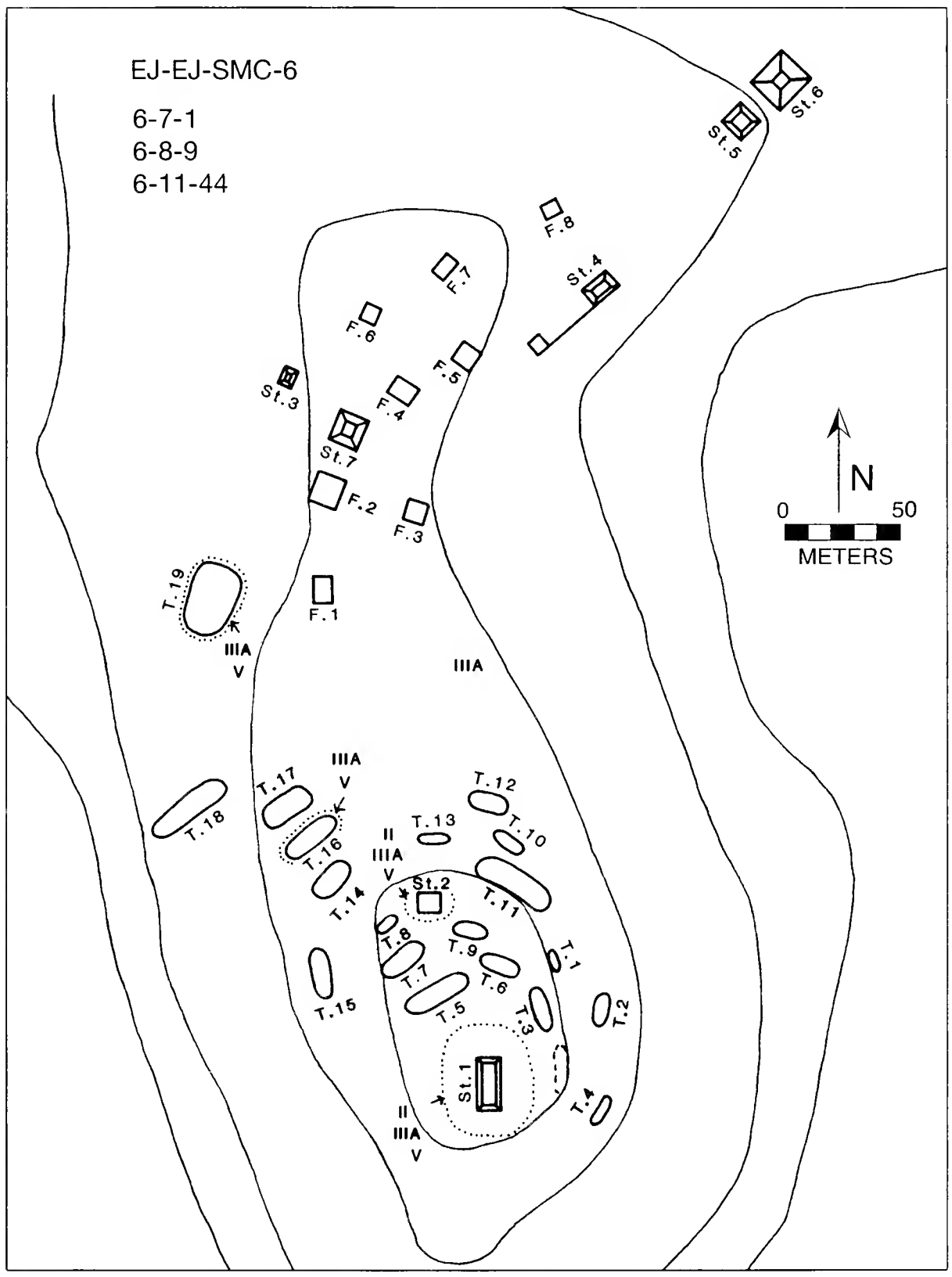



FIG. IX.22. EJ-EJ-SMC-6.

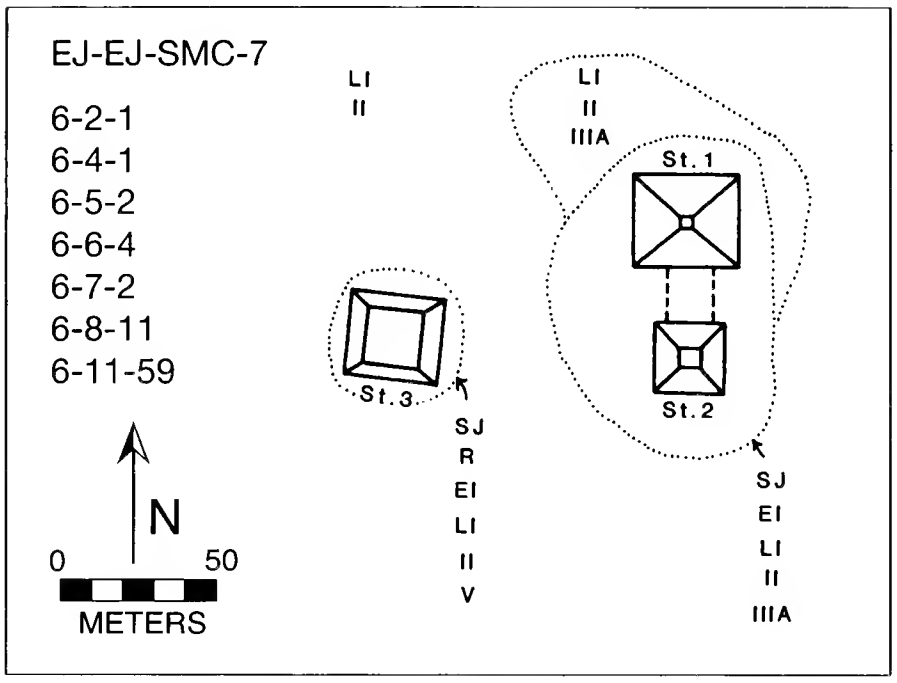



FIG. IX.23. EJ-EJ-SMC-7.

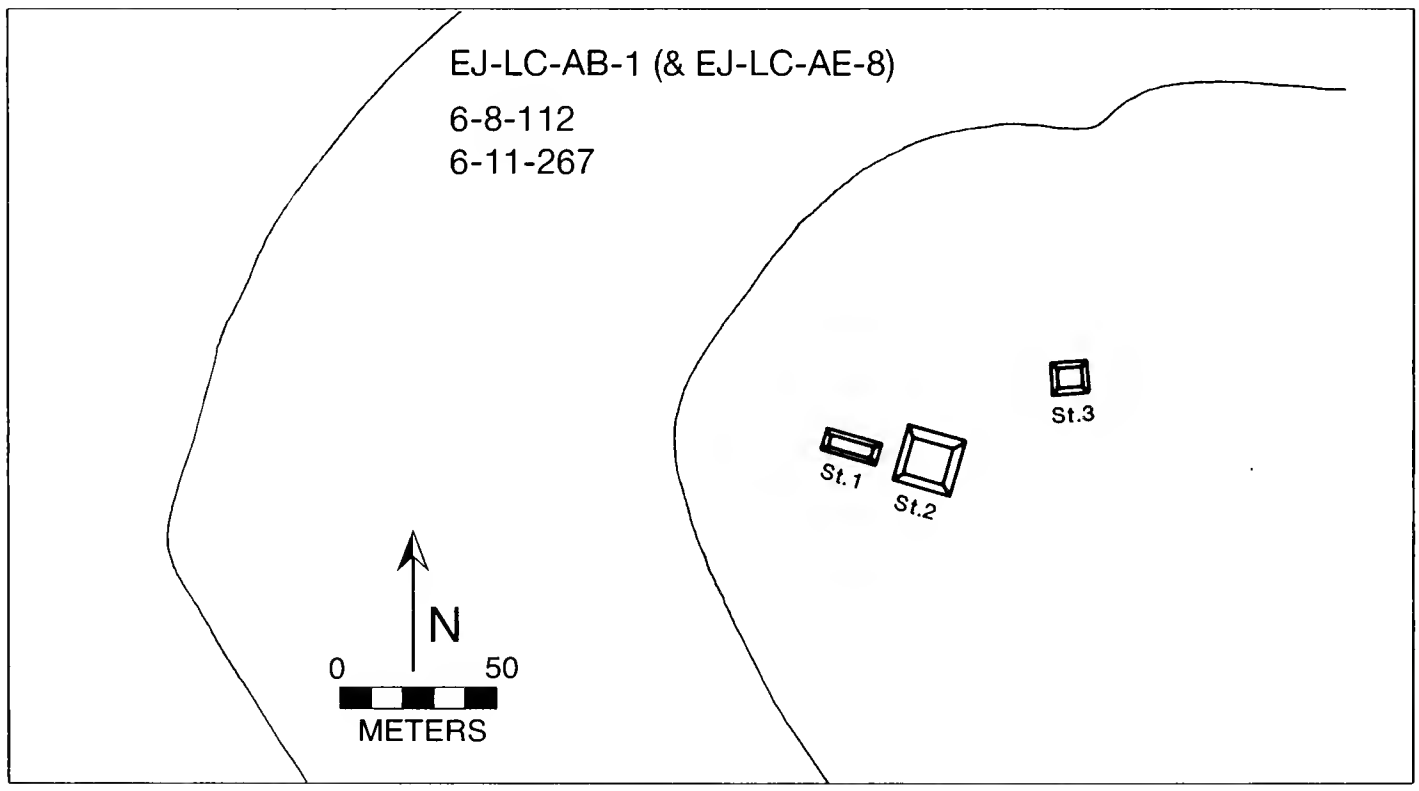



FIG. IX.24. EJ-LC-AB-1.

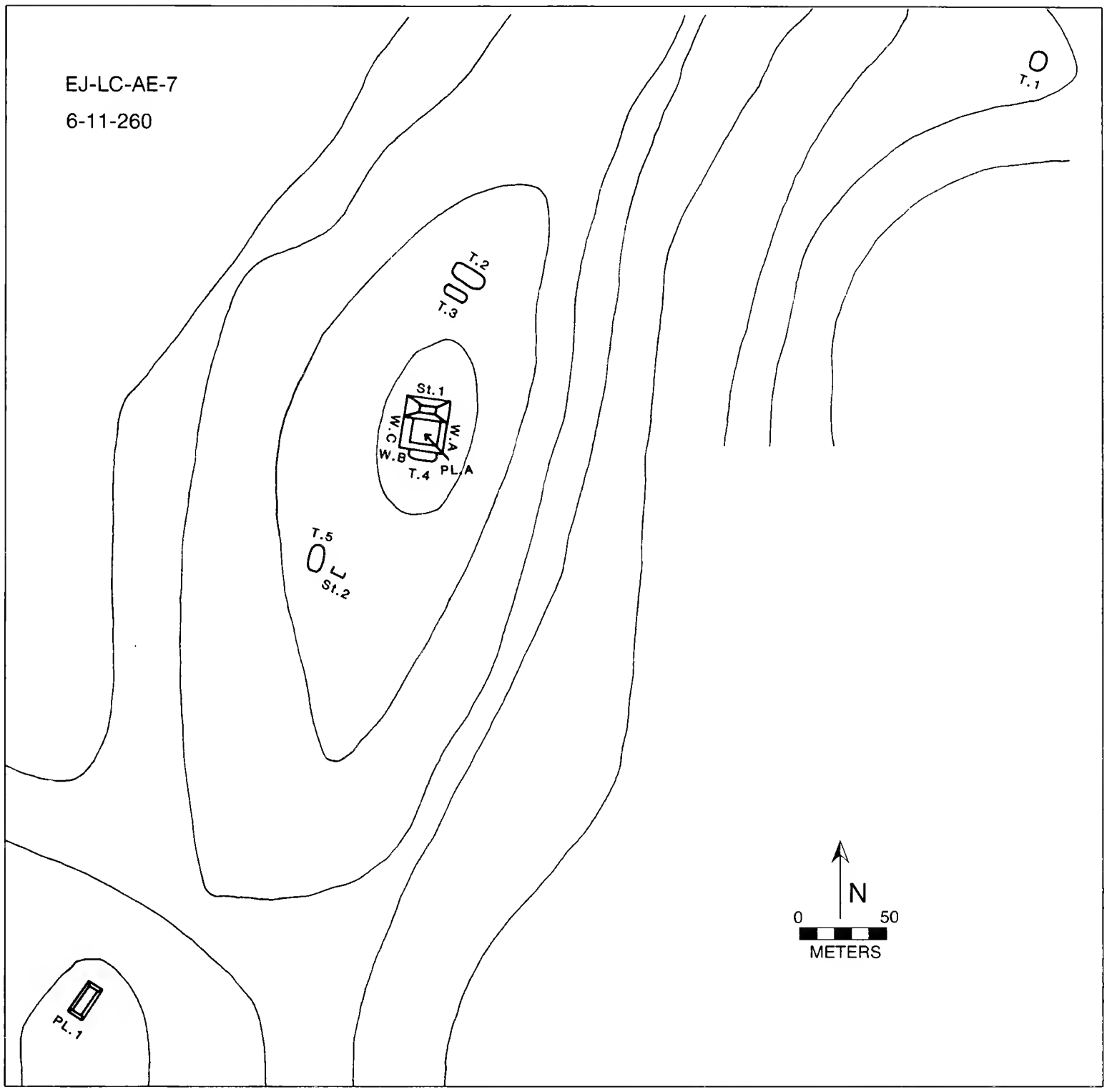



FIG. IX.25. EJ-LC-AE-7.

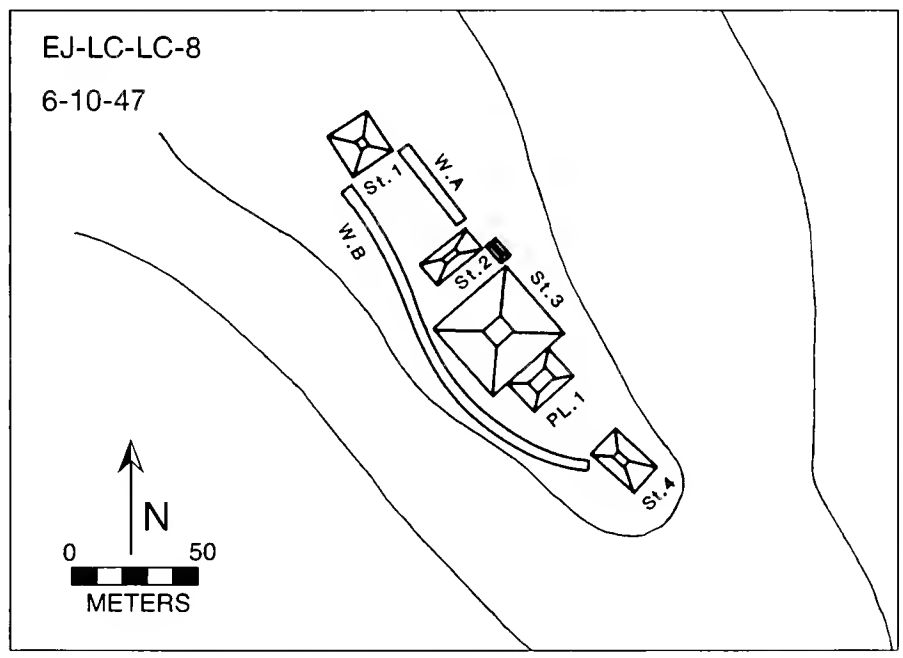



FIG. IX.26. EJ-LC-LC-8.

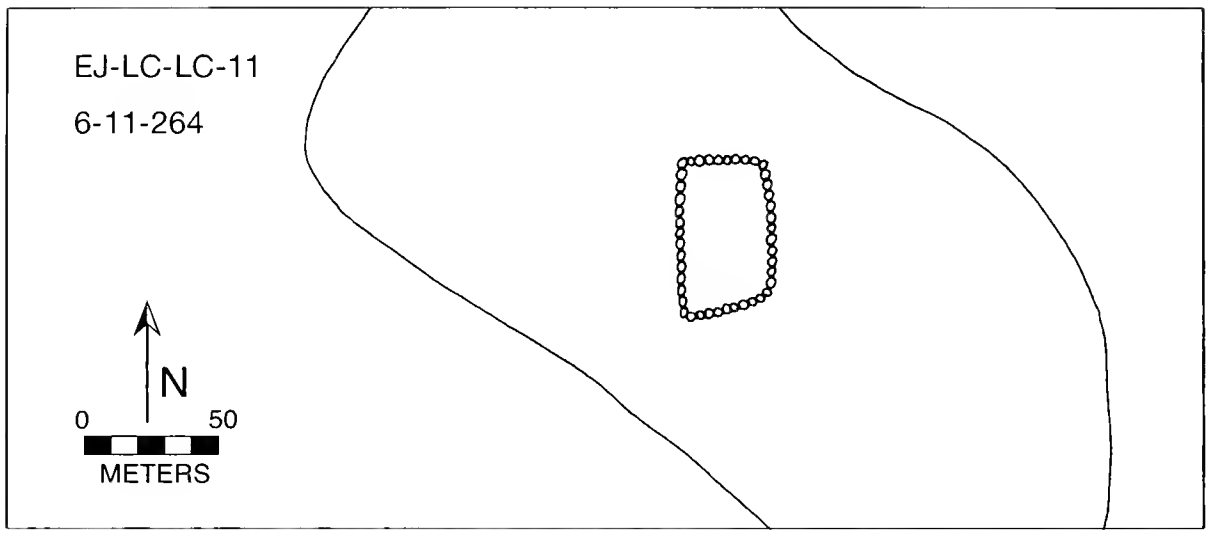



FIG. IX.27. EJ-LC-LC-11.

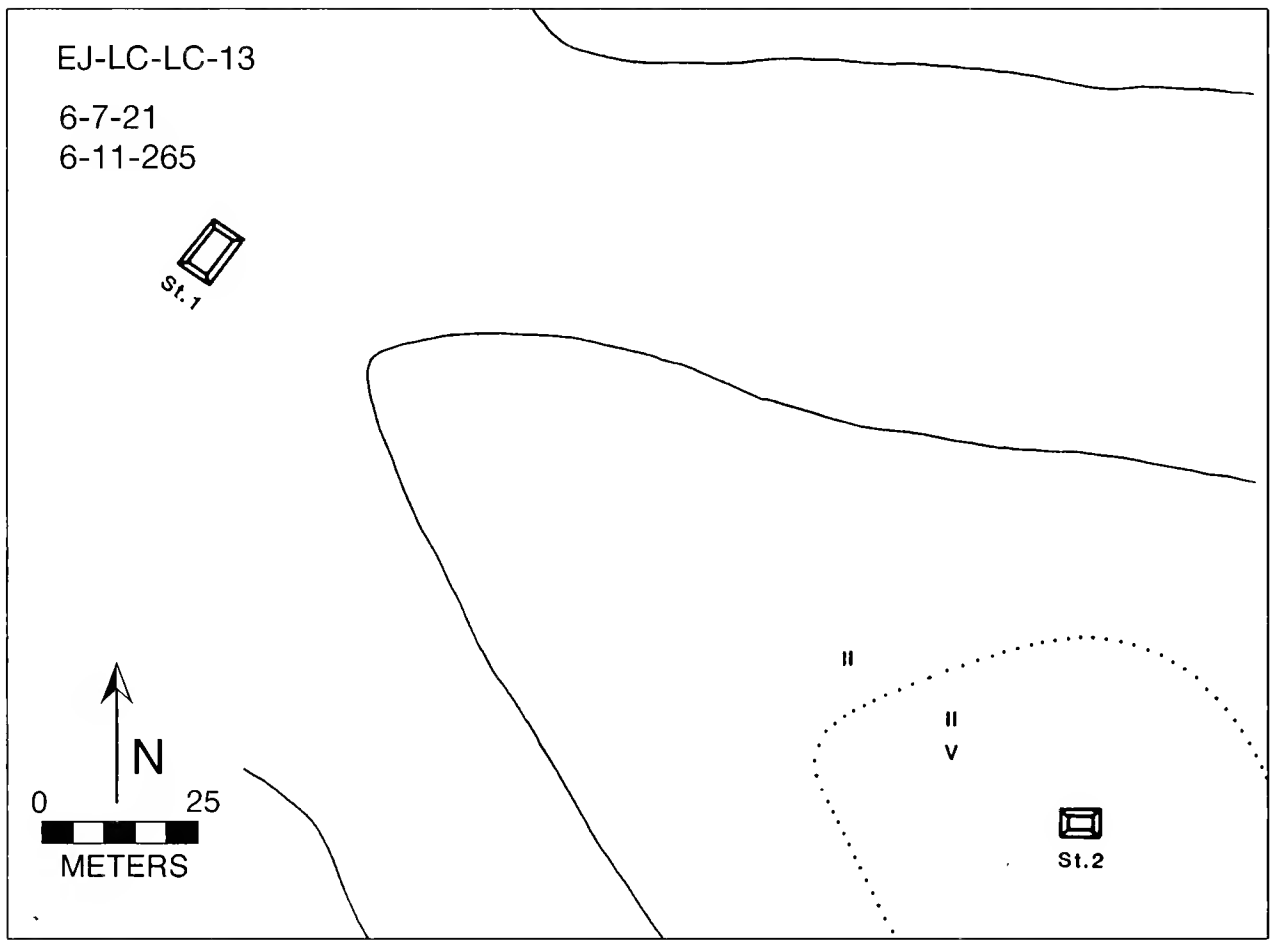



FIG. IX.28. EJ-LC-LC-13.

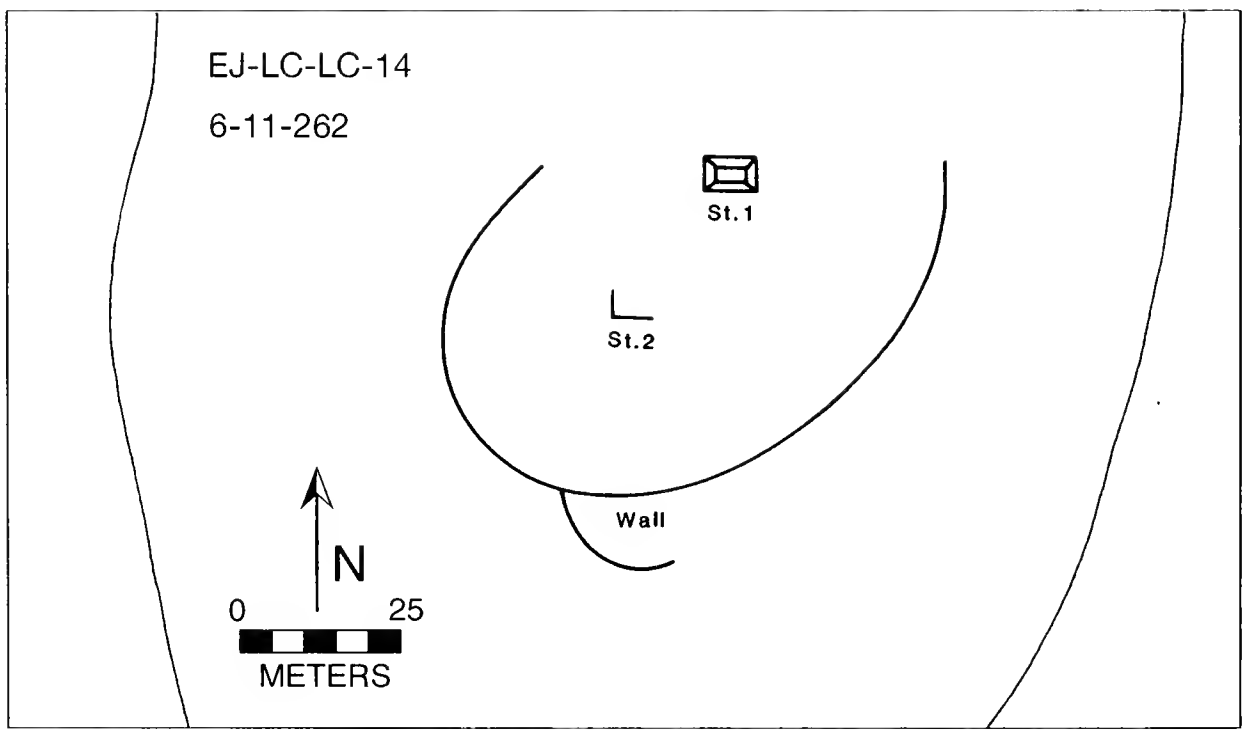



FIG. IX.29. EJ-LC-LC-14.

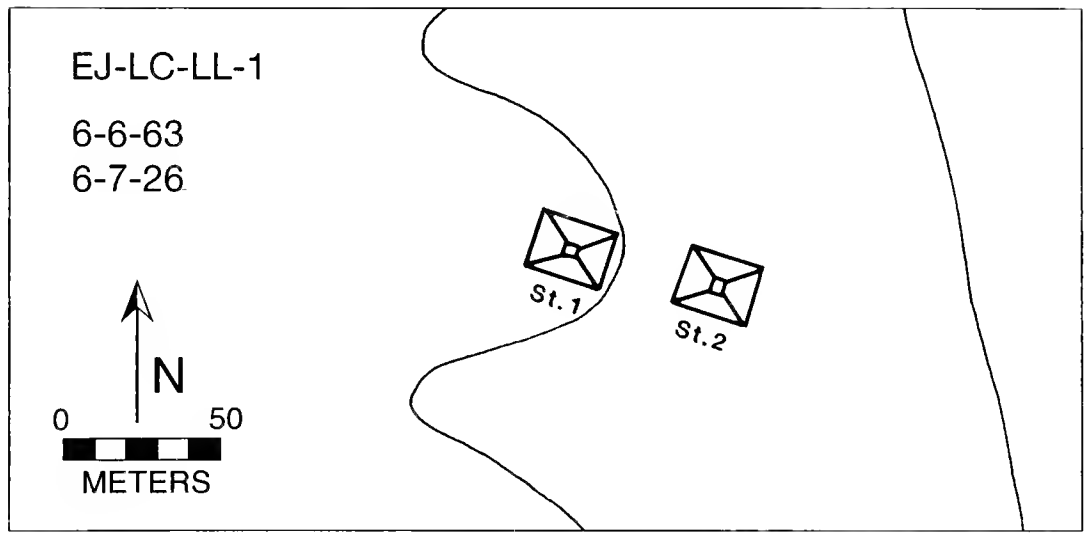



FIG. IX.30. EJ-LC-LL-1.

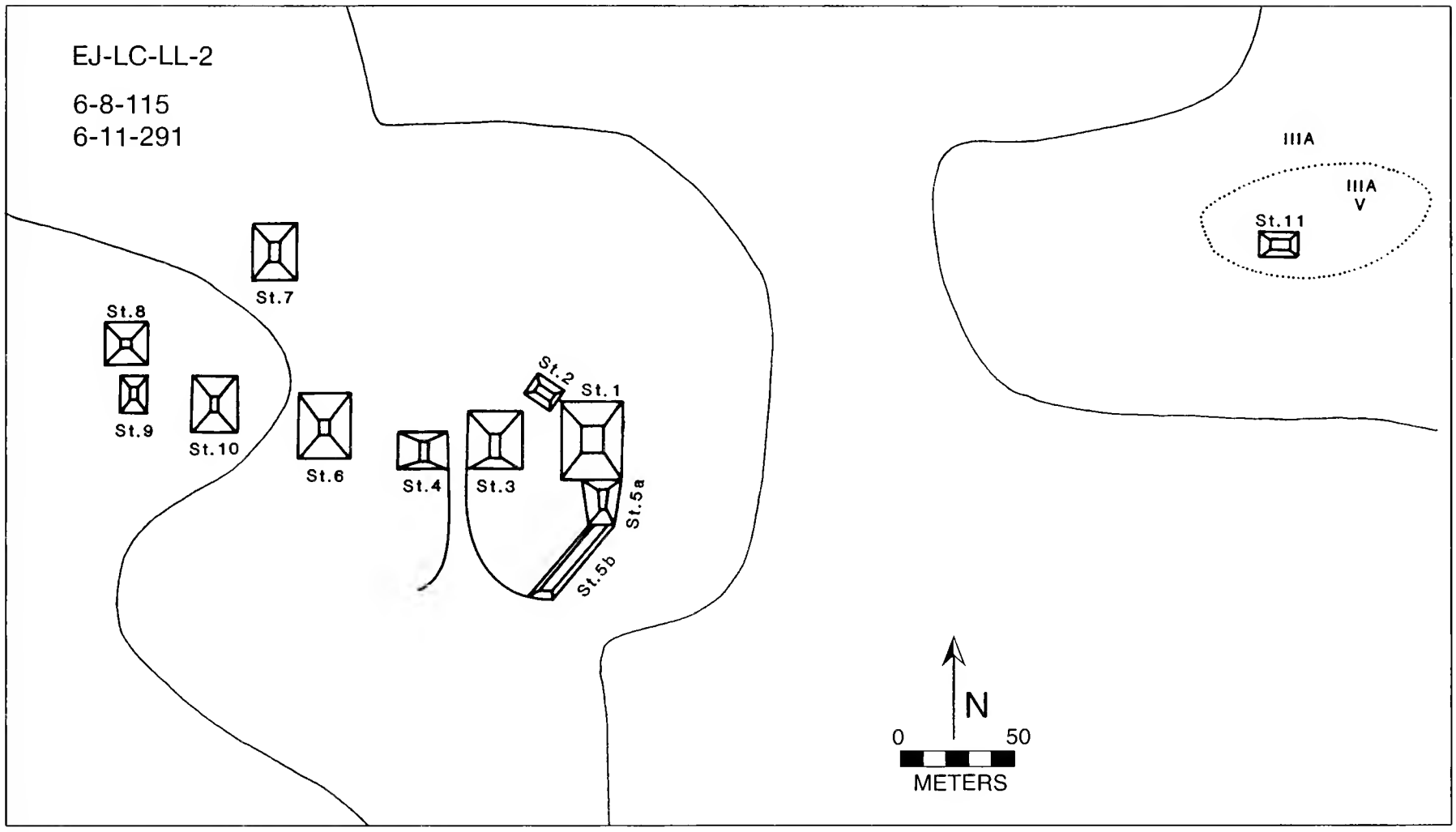



FIG. IX.31. EJ-LC-LL-2.

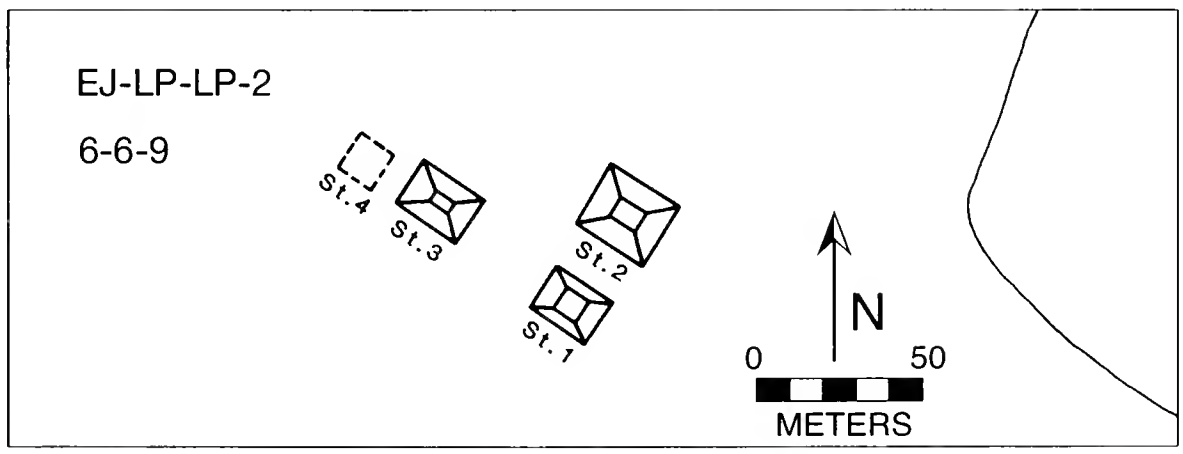



FIG. IX.32. EJ-LP-LP-2.

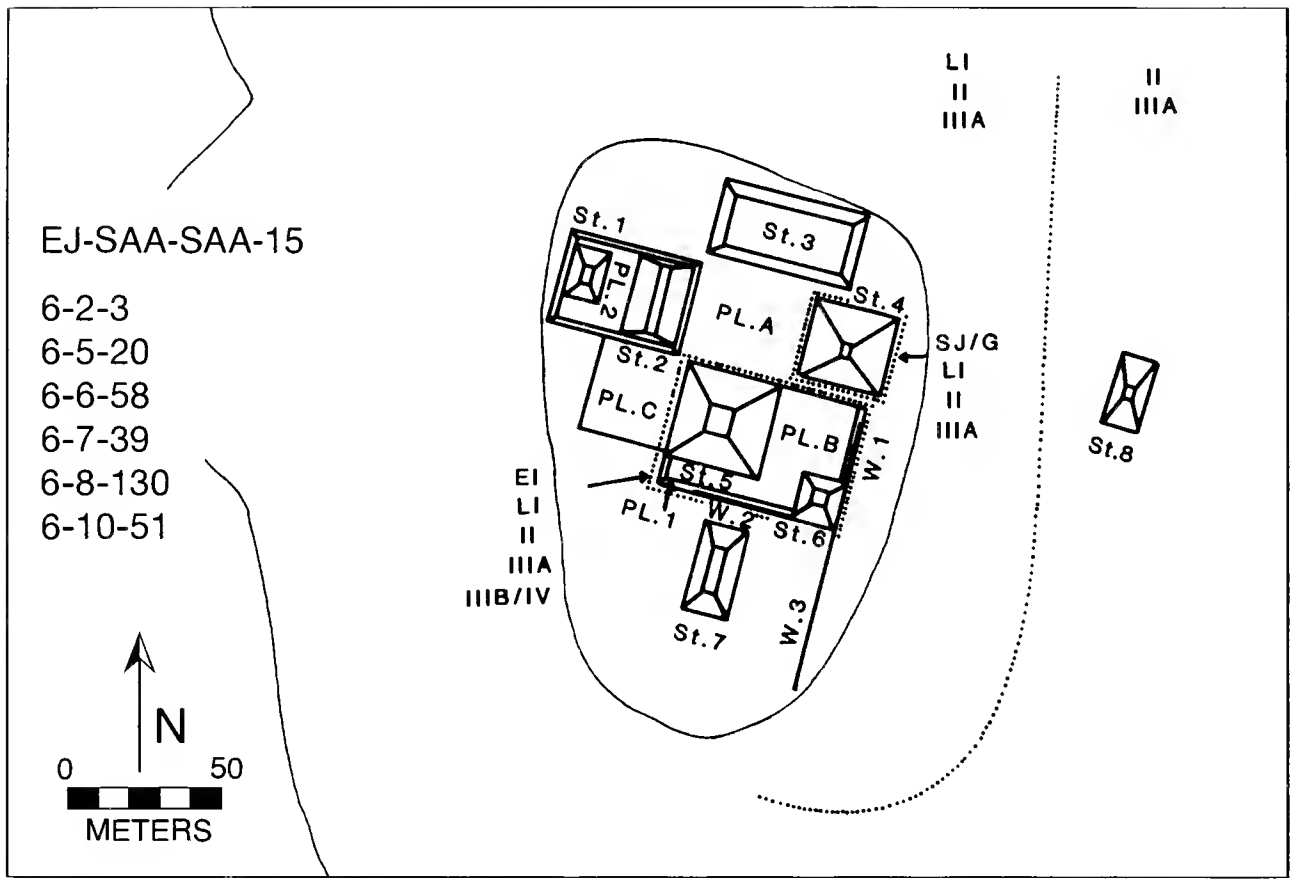



FIG. IX.33. EJ-SAA-SAA-15.

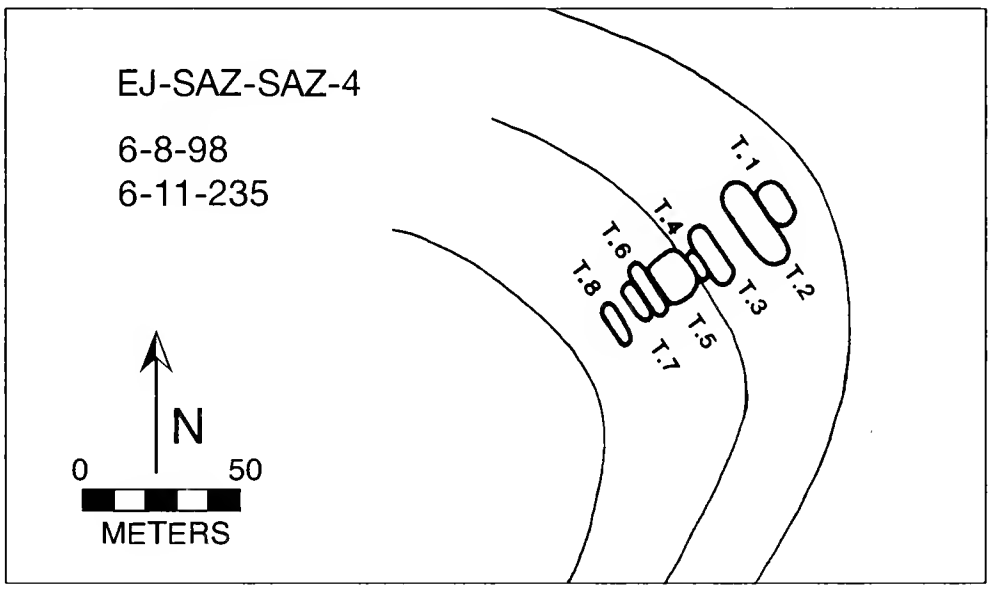



FIG. IX.34. EJ-SAZ-SAZ-4.

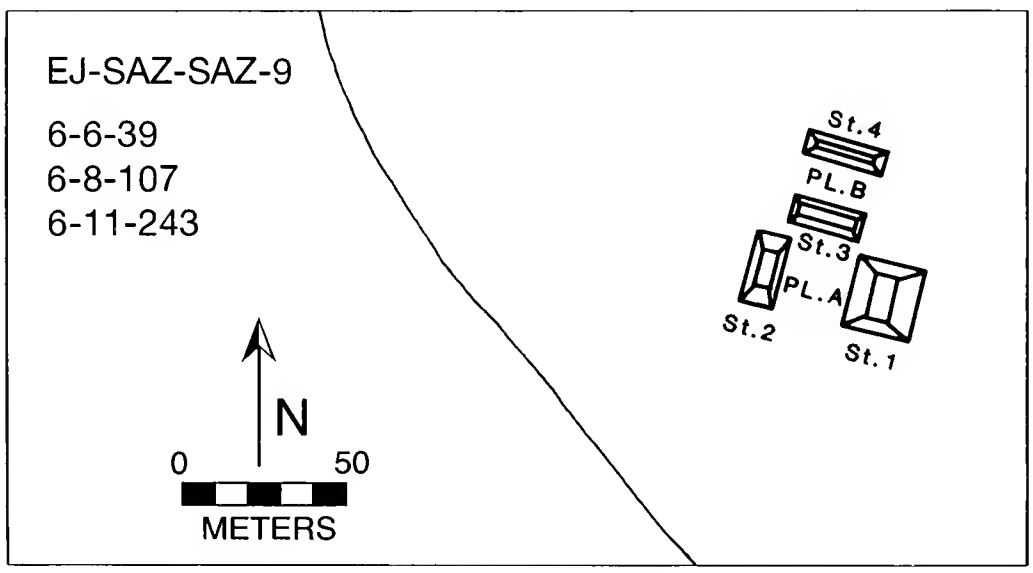



FIG. IX.35. EJ-SAZ-SAZ-9.

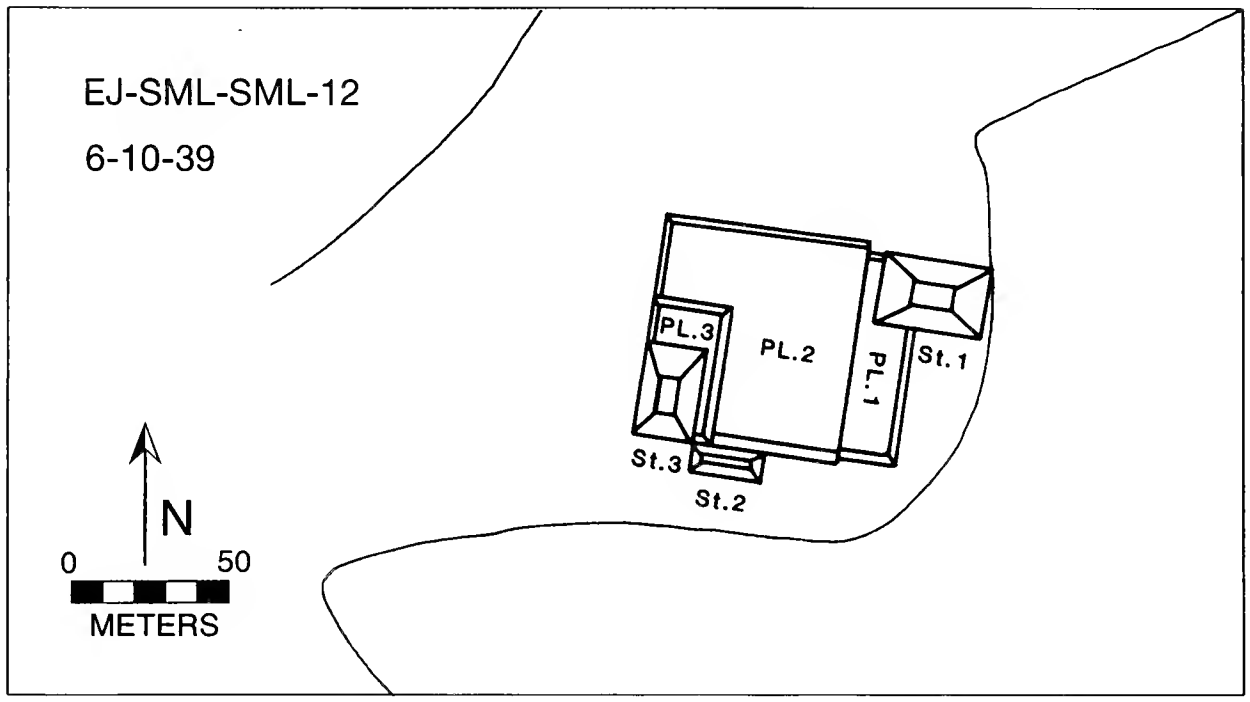



FIG. IX.36. EJ-SML-SML-12.

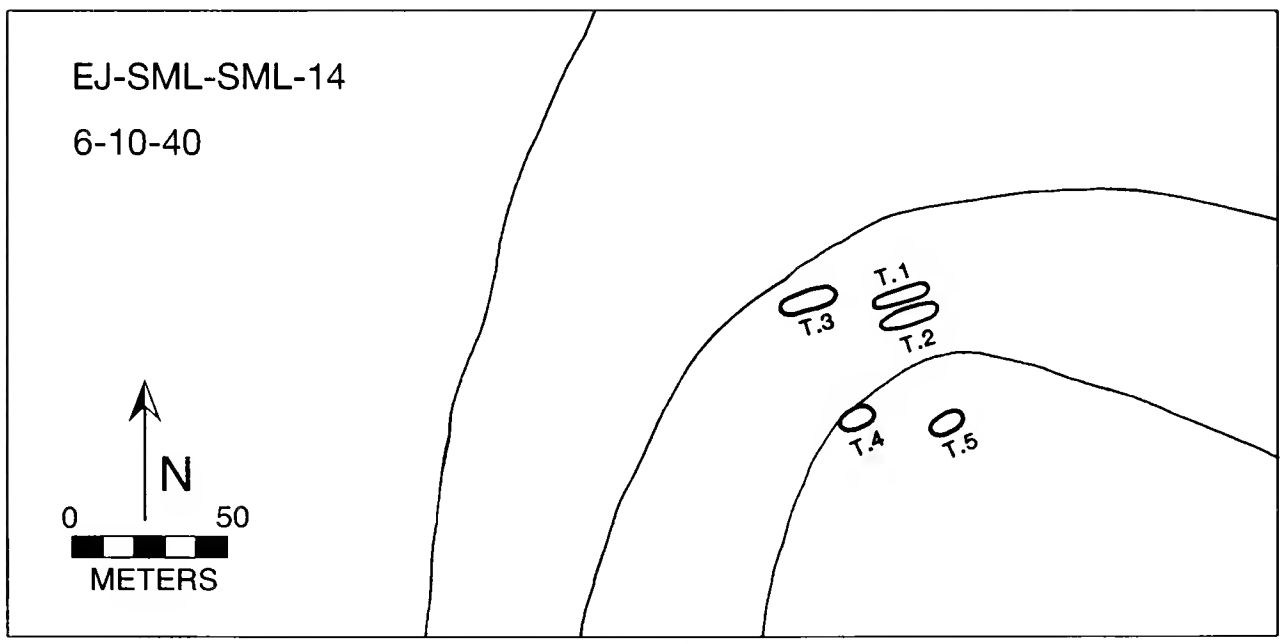



FIG. IX.37. EJ-SML-SML-14.

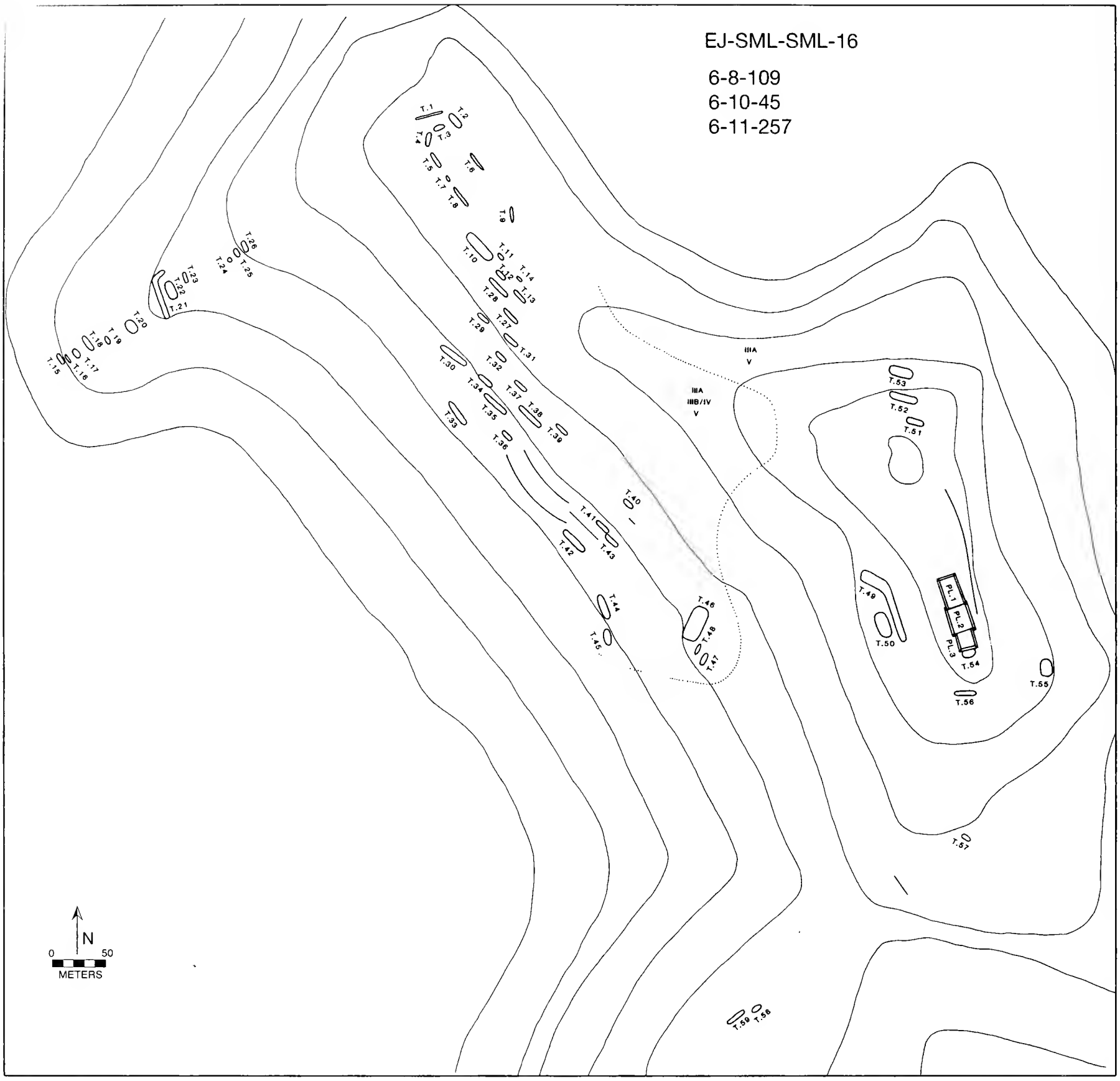



FIG. IX.38. EJ-SML-SML-16.

FIG. IX.39. EJ-SML-SML-18.

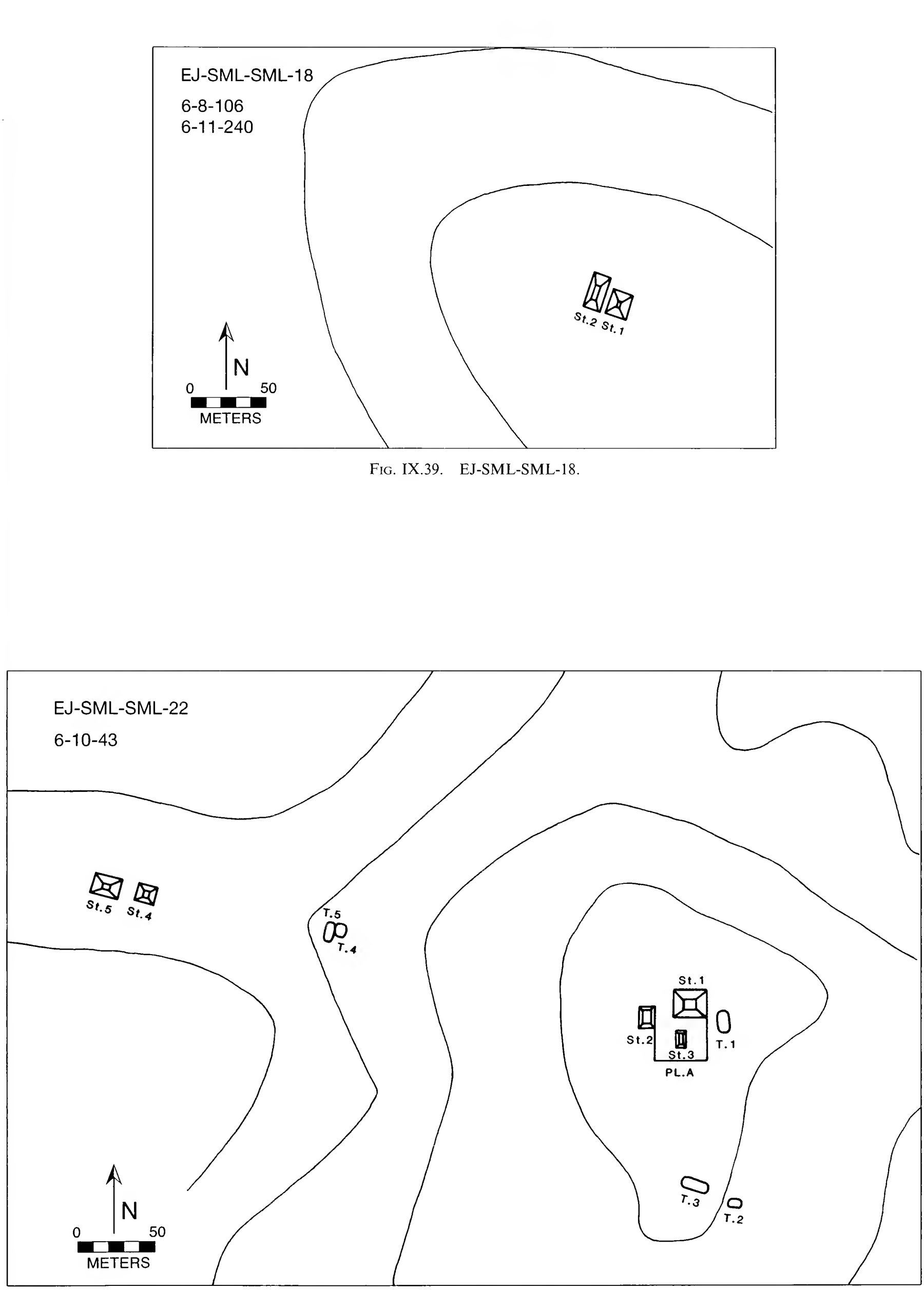



FIG. IX.40. EJ-SML-SML-22.

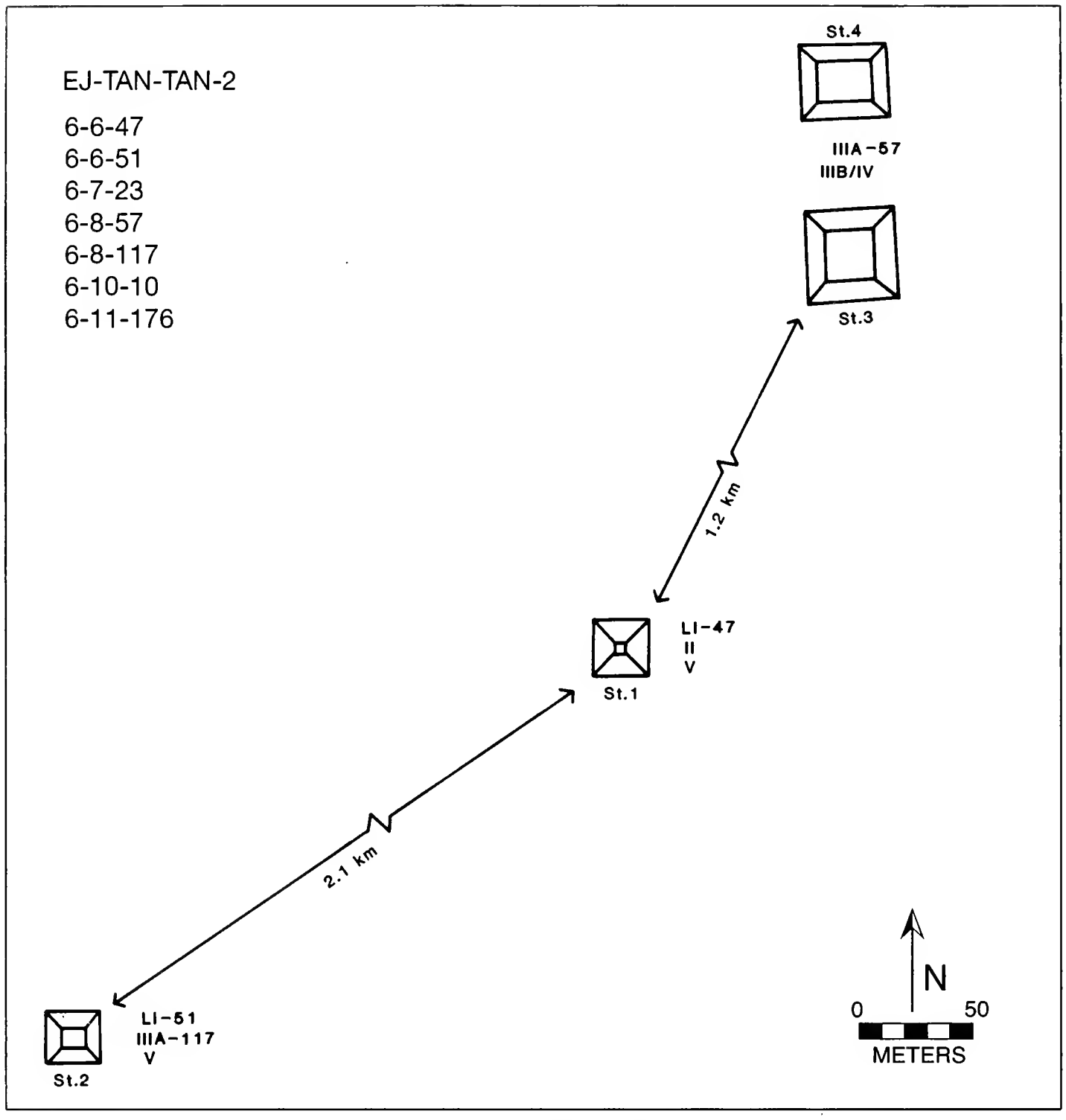



FIG. IX.41. EJ-TAN-TAN-2.

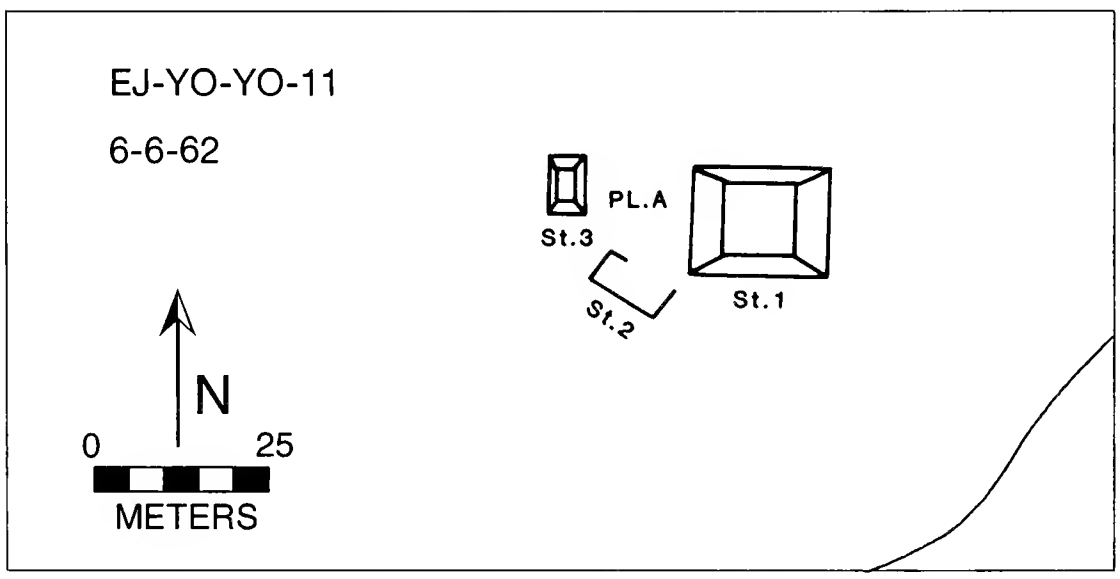



FIG. IX.42. EJ-YO-YO-11.

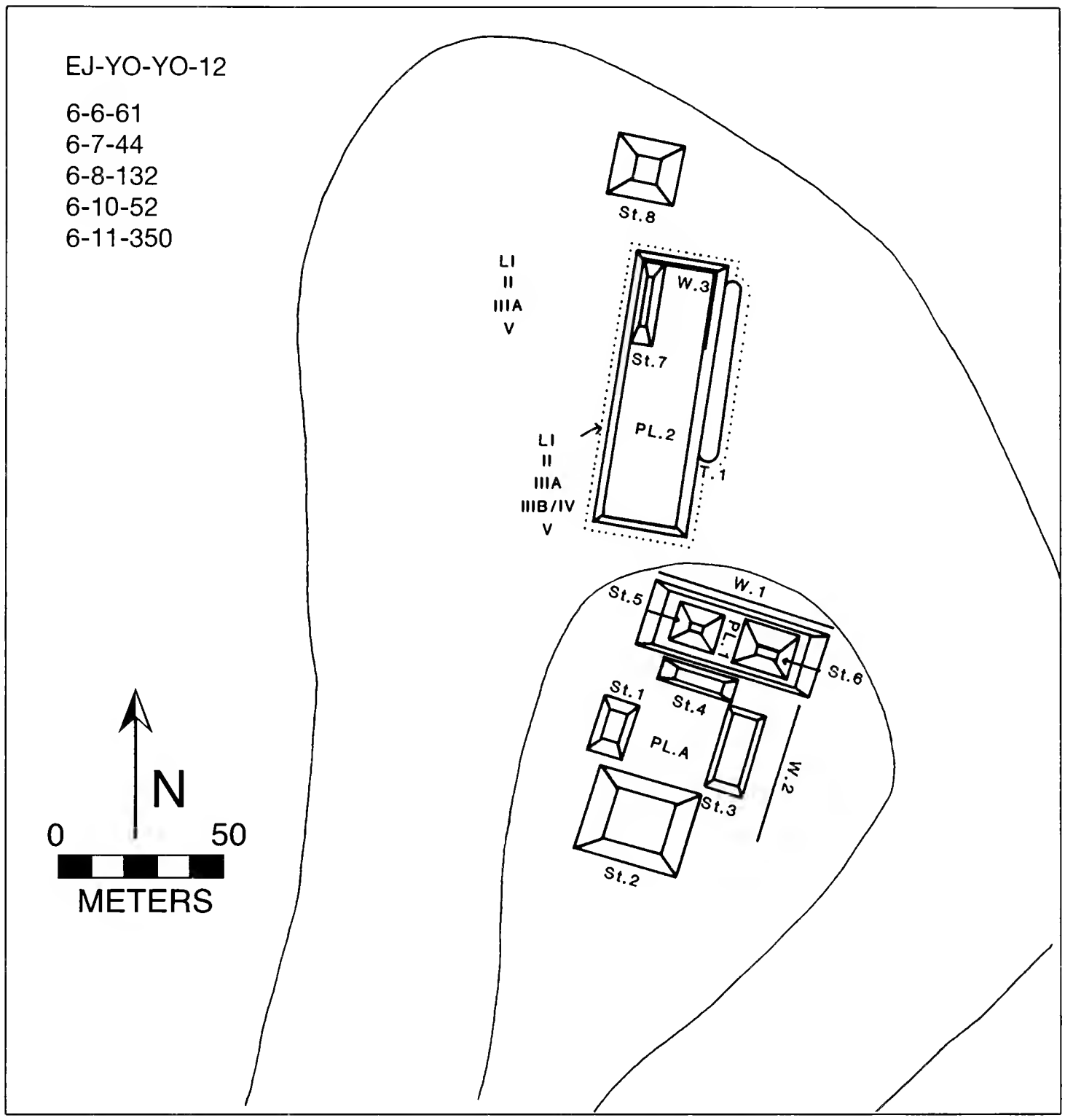



FIG. IX.43. EJ-YO-YO-12.

OC-SJP-SJP-108

6-8-34
6-11-132

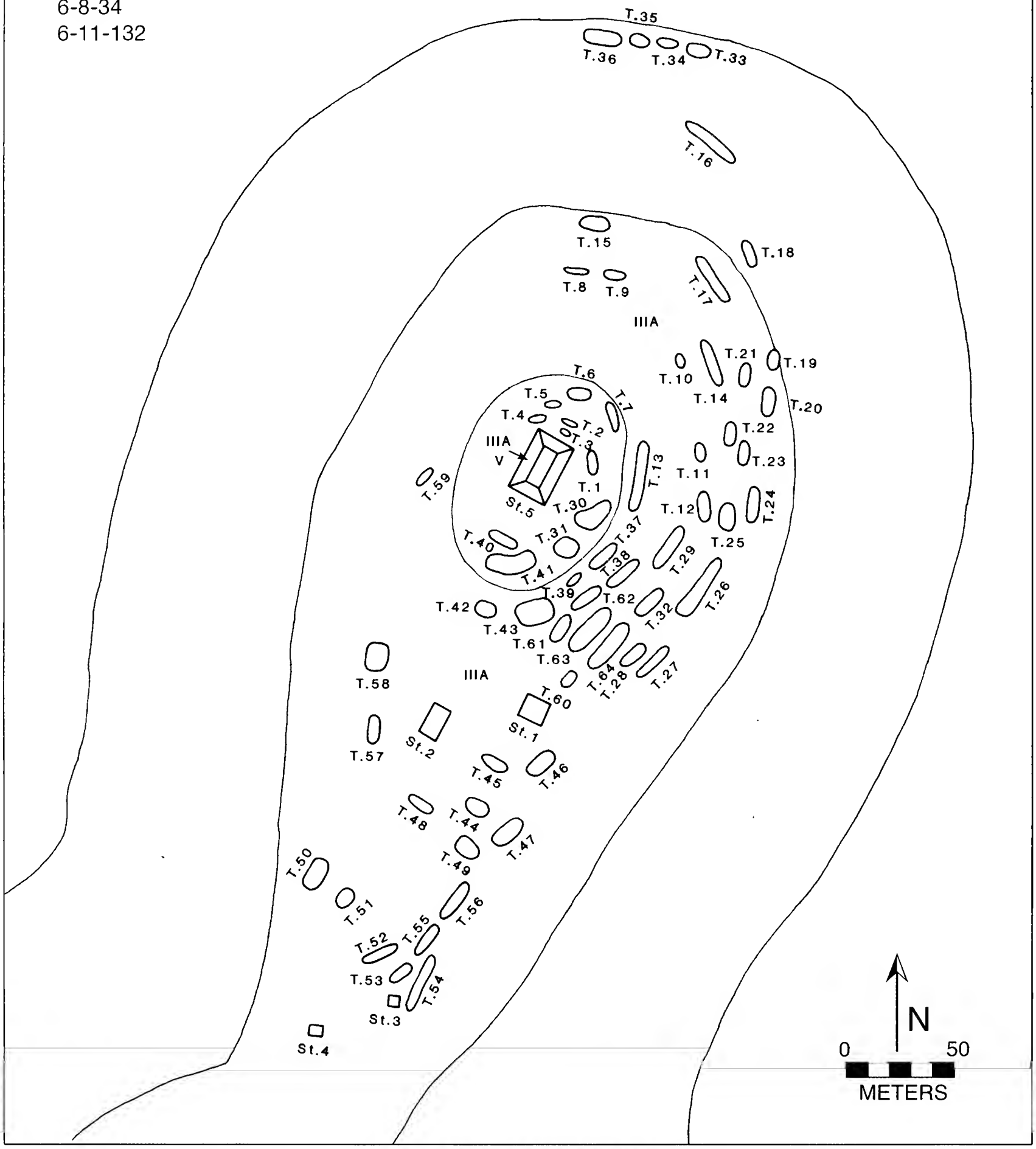



FIG. IX.44. OC-SJP-SJP-108.

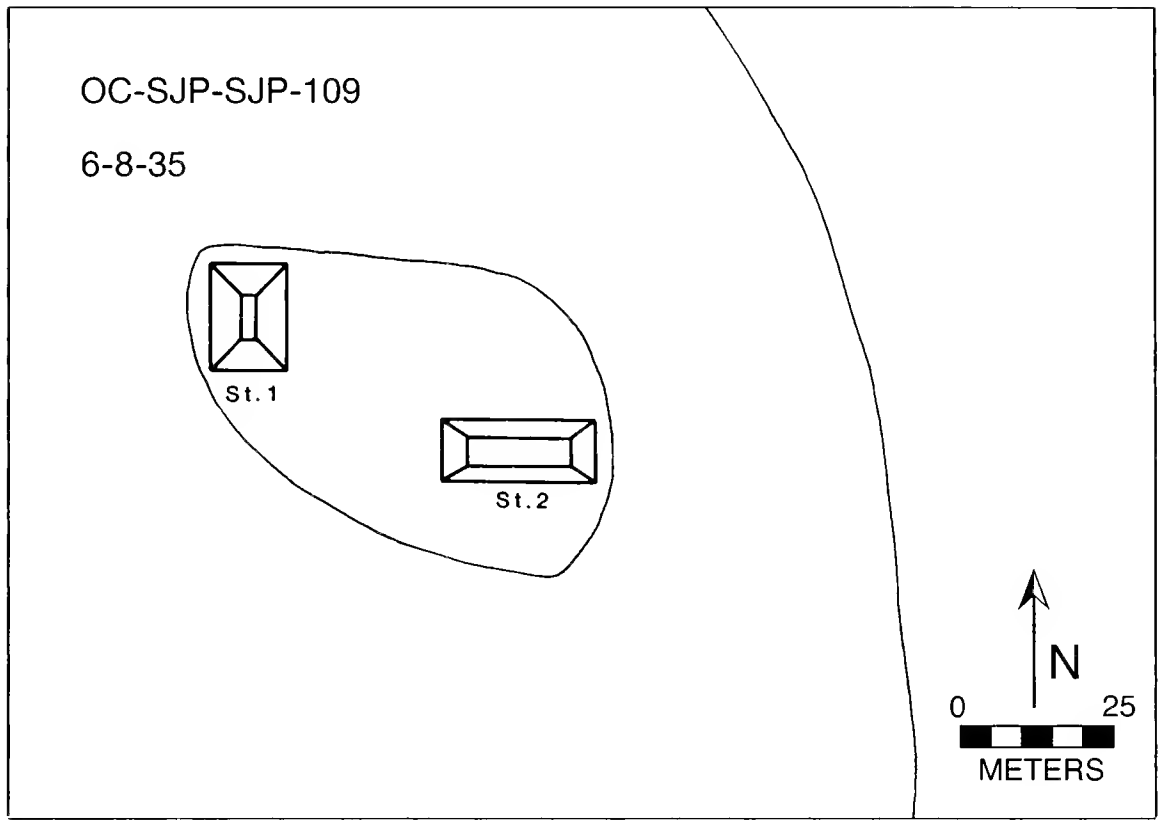



FIG. IX.45. OC-SJP-SJP-109.

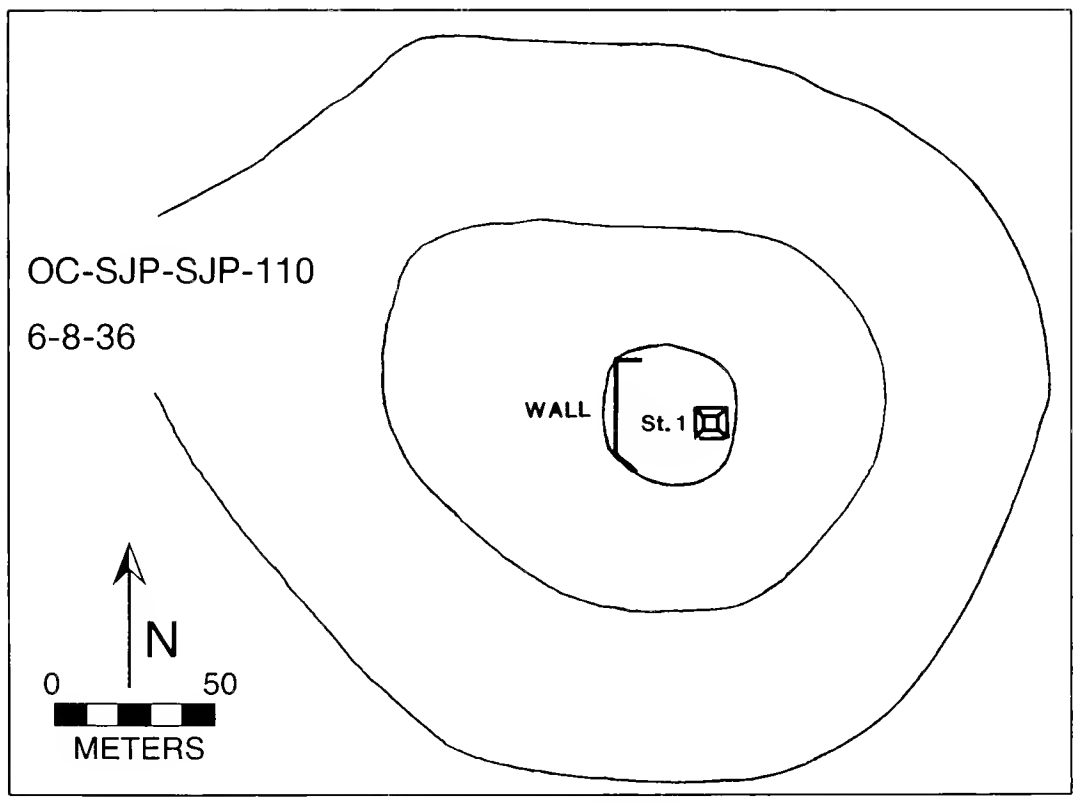



FIG. IX.46. OC-SJP-SJP-110.

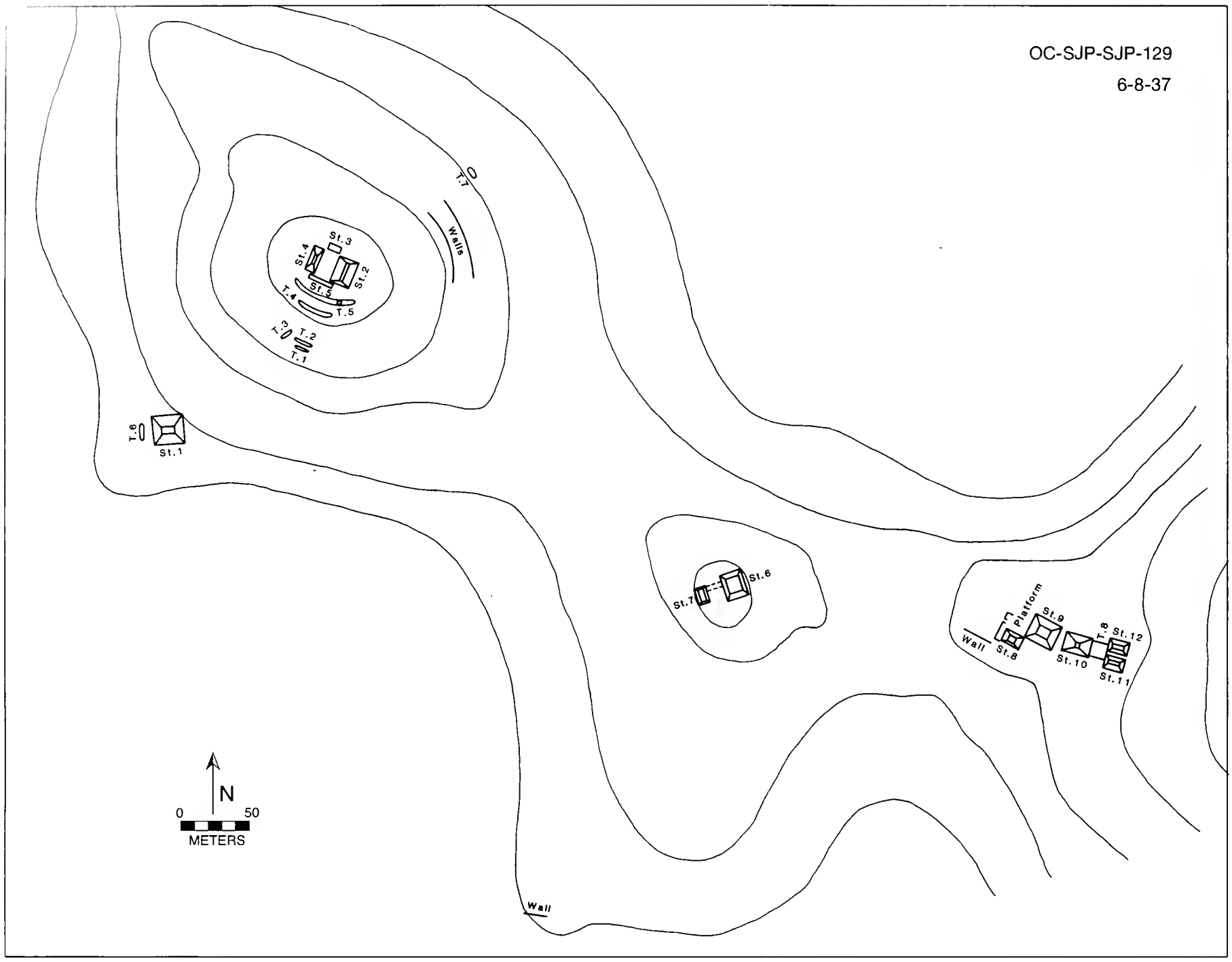



FIG. IX.47. OC-SJP-SJP-129.

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